Vertellus

July 29, 2011

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, DC 20044-7611

Air and Radiation Division
EPA Region 5
77 W. Jackson Blvd (AE-17J)
Chicago, IL 60604
Attn: Compliance Tracker

Office of Region Counsel
EPA Region 5
77 W. Jackson Blvd (C-14J)
Chicago, IL 60604

RE: DOJ No. 90-5-2-1-09022
Vertellus Agriculture & Nutrition Specialties LLC
Indianapolis Indiana
Compliance Status Report

To Whom It May Concern:

Vertellus Agriculture & Nutrition Specialties LLC (Vertellus) respectfully submits the enclosed Compliance Status Report as required in Section VII. Reporting Requirements of the Consent Decree between the United States of America and Vertellus, Civil Action No. 1:09-cv-1030 SEB-TAB.

If you have any questions, please contact me at 317-248-6511.

Sincerely,

Tamra Kress
EHS&S Manager

Cc: John Jones, Vertellus
Anne Frye, Vertellus
Constantinos Loukeris, EPA
Deboraha Carlson, EPA
David Harrison, IDEM (via email)

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Vertellus Agriculture & Nutrition Specialties LLC
Indianapolis Indiana

Compliance Status Report

Table of Contents

1. Purpose

The Enhanced LDAR Program (ELP) required by the Consent Decree (CD) with the U.S. Environmental Protection Agency (EPA), Civil Action No. 1:09-cv-1030 SEB-TAB as Lodged on August 21, 2009 and Effective December 1, 2009 (CD), requires Vertellus Agriculture & Nutrition Specialties LLC (Vertellus) to submit this Compliance Status Report by July 31st of each year until termination of the CD. The following sections of the report are as outlined in paragraph 61.

2. The Number of Personnel Assigned to LDAR Functions at the Facility and the Percentage of Time Each Person Dedicated to Performing His/Her LDAR Functions

The following table includes the persons at the facility having a role in the LDAR program as described in the Facility-Wide LDAR Document and the percentage of time dedicated to LDAR Functions for the following time periods:

Effective Date December 1, 2009 - June 30, 2010

July 1, 2010 - June 30, 2011

Role	% Time Dedicated to LDAR Functions	
	2010 (Dec 1, 2009-June 30, 2010)	2011 (July 1, 2010-June 30, 2011)
Environmental Manager	20%	5%
Environmental Specialist	50%	25%
Environmental Unit Manager	40%	20%
Environmental Unit Operator	75%	35%
Maintenance Manager	20%	5%
Maintenance Supervisor		15%
Production Assistant	40%	25%
Reliability Engineer	20%	20%
Maintenance Planner		15%
Mechanics	3.5%	3.5%
EMSI (LDAR Contractor)	696 man-hours	2,678 man-hours

Note that the percentage of time dedicated to LDAR functions is only an estimate since plant personnel are not required to record or assign hours to projects/tasks. The reduction in percent time spent by Vertellus personnel reflects the shift from the initial implementation of the program to the ongoing monitoring now conducted by EMSI.

3. An Identification and Description of any Non-Compliance with the Requirements of Section V (Compliance Requirements)

The applicable sections of the CD are identified here to ensure complete reporting of any non-compliance.

A. Applicability of the Enhanced LDAR Program

The applicable requirements of the ELP and any federal, state, or local LDAR program are identified in the Facility-Wide LDAR document. The facility complies with the most stringent requirements. As a part of the Third-Party Audit, this information was reviewed and it was confirmed that Vertellus is in compliance with the most stringent LDAR requirements.

B. Facility-Wide LDAR Document

The Facility-Wide LDAR Document was developed as required within six months of the Date of Lodging and includes all of the information identified in paragraph 14 of the CD. The document is not a required submittal but was sent to EPA in February 2010. The document must be reviewed and updated on an annual basis as needed by no later than 60 days after each annual LDAR Audit Completion Date. Vertellus will revise the facility-wide LDAR document by August 27, 2011.

C. Monitoring Frequencies and Equipment

The monitoring frequencies by equipment type are identified in the Facility-Wide LDAR Document. Vertellus is in compliance with all monitoring frequency requirements except as follows:

- Tag # 2242.01 and 2243.02 both open-end line plugs, were not monitored in the fourth quarter of 2010. It was discovered and both were immediately monitored on January 25, 2011. The two tags were incorrectly entered as requiring semi-annual monitoring. The database was corrected so that the equipment will be monitored quarterly.

Emission Monitoring Service, Inc. (EMSI) initiated the second quarter monitoring in April 2010, within nine months after the Date of Lodging of the CD. All monitoring data is collected using a data logger and is downloaded to the CLEAR LDAR database at least weekly.

D. Leak Definitions

The leak definitions by equipment type are identified in the Facility-Wide LDAR Document. The leak definitions as identified in the CD were implemented in April 2010 which is within nine months after the Date of Lodging of the CD.

E. Repairs

As reported in the semi-annual HON, Pharma, and benzene reports included in Appendix A, all repairs were completed within 15 days or the equipment was placed on the Delay of

Repair List (DORL). Quasi-Directed Maintenance was completed as required in the CD. For repairs/replacements completed per the CD, see Section 5 of this report.

F. Delay of Repair (DOR)

Vertellus complies with the DOR requirements for LDAR. There were no areas on non-compliance for the reporting period.

G. Equipment Replacement and Improvement Program

Installing New Valves. The MOC program is described in the Facility-Wide LDAR Document under Section 4 (Tracking Program). The MOC program and incorporation of the ELP requirements into the piping specifications within the Engineering Guidelines ensures that new valves installed to each Covered Process Unit and placed in LDAR service are either Certified Low-Leaking Valves or fitted with Certified Low-Leaking Valve Packing.

List of all Valves in the Covered Process Units. The list of Existing Valves was submitted to EPA on May 20, 2010 as required by the CD.

Replacing or Repacking Valves Found Leaking at or above 250 ppm. For details see section 5 of this report.

Replacing or Repacking Valves with a Screening Value between 100 and 250 ppm during the First Maintenance Shutdown. The First Maintenance Shutdown for the Covered Process Units was initiated on June 13, 2011. A list of all Existing Valves that had screening values between 100 ppm and 250 ppm was generated and included the monitoring period from April 2010 through March 2011. All the valves on the list that were not already low-leak valves were upgraded during the shutdown (26 valves).

Commercial Unavailability of Certified Low-Leaking Valve or Certified Low-Leak Valve Packing. No issues found to date.

Installing New Connectors. The MOC program is described in the Facility-Wide LDAR Document under Section 4 (Tracking Program). The MOC program and incorporation of the ELP requirements into the piping specifications within the Engineering Guidelines ensures that best efforts are used to install new connectors that are least likely to leak to each Covered Process Unit.

Replacing or improving connectors that leak (Screening Value at or above 250 ppm) two or more times in a rolling 24-month period. Per the CD, the leak definitions were applied starting with the second quarter monitoring for 2010 (no later than nine months from Date of Lodging). For the list of connectors that were found leaking during the semi-annual monitoring, see Section 5 of this report.

H. Management of Change (MOC)

The MOC program is described in the Facility-Wide LDAR Document under Section 4 (Tracking Program). The MOC program and incorporation of the ELP requirements into the piping specification within the Engineering Guidelines ensures that changes within the Covered Units are reviewed for LDAR compliance.

I. Training

Completion of training for all employees and contractors responsible for LDAR monitoring, maintenance of equipment, repairs, or any other duties generated by the program must be completed with one year after Date of Lodging (August 2010). Employee training was completed by August 21, 2010. Annual refresher training is underway and will be completed during the calendar year.

J. Quality Assurance/Quality Control

Daily certifications by the monitoring technician (EMSI) are completed on each day that monitoring occurs. These records are kept on-site and reviewed as a part of the quarterly audits completed by Vertellus personnel. No areas of non-compliance have been identified.

K. LDAR Audits and Corrective Action

The LDAR Audit Commencement Date was April 25, 2011. The Audit Completion Date was June 28, 2011. The Preliminary Corrective Action Plan (CAP) was completed July 22, 2011. No areas of non-compliance were identified during the audit. There was one item of concern noted and the action for that item is identified in the CAP. The schedule in the Preliminary CAP includes completion of the actions by August 15, 2011.

The Final CAP will be submitted to EPA no later than September 26, 2010 as required by the CD.

L. Certification of Compliance

Within 180 days after the initial LDAR Audit Completion Date, Vertellus shall submit the Certification of Compliance as required by paragraph 47. This certification was submitted to EPA on December 13, 2010.

M. Recordkeeping

Vertellus is in compliance with the recordkeeping requirements of the CD.

N. Operation and Maintenance of the Plant 41 Incinerator

See Section 10 of this report.

4. **An Identification of any Problems Encountered in Complying with the Requirements of Section V (Compliance Requirements)**

As identified in the Preliminary CAP, one item of concern was identified and the action created to resolve the problem encountered. The action is:

- ACTION—Confirm that the MOC document is in the file and that tagging and/or database is up-to-date.

As identified in section C, the following non-compliance was noted:

- Tag # 2242.01 and 2243.02 both open-end line plugs, were not monitored in the fourth quarter of 2010. It was discovered and both were immediately monitored on January 25, 2011. The two tags were incorrectly entered as requiring semi-annual monitoring. The database was corrected so that the equipment will be monitored quarterly.

Corrective actions were taken immediately. The equipment was monitored and the database was updated to prevent reoccurrence.

5. **The Information Required in Paragraph 37-Equipment Replacement/Improvement Report**

Paragraph 37 requires the following information be provided in this report:

- <u>Actions taken to comply with Subsection G, including identifying each piece of equipment that triggered a requirement in Subsection G, the screening value for that piece of equipment, the type of action taken (replacement, repacking, improvement, elimination), and the date when action was taken</u>. In Appendix B, is a list of all pieces of equipment found leaking and subject to the requirements of Subsection G (commencing no later than nine months after Date of Lodging).
- <u>Identify any required actions that were not taken and explain why</u>. The following exceptions are noted:
    - Tag # 2242.01 and 2243.02 both open-end line plugs, were not monitored in the fourth quarter of 2010. It was discovered and both were immediately monitored on January 25, 2011. The two tags were incorrectly entered as requiring semi-annual monitoring. The database was corrected so that the equipment will be monitored quarterly
- Identify the schedule for any known, future replacements, repacking, improvements, or eliminations. The following valves are due to be replaced:
    - 0235 valve on DORL

6. A Description of the LDAR Trainings that Have Been Done in Accordance with this Consent Decree

As provided in Section 3 of this report, completion of training for all employees and contractors responsible for LDAR monitoring, maintenance of equipment, repairs, or any other duties generated by the program must be completed with one year after Date of Lodging (August 2010). Employee training was completed by August 21, 2010. Annual refresher training for 2011 is underway.

7. Any Deviations Identified in the QA/QC performed under Subsection J of Section V (Compliance Requirements)

As provided in Section 3 of this report, no deviations were identified.

8. A Summary of LDAR Audit Results including Specifically Identifying all Areas of Non-Compliance

A copy of the Third-Party Leak Detection and Repair Audit completed by August Mack Environmental, Inc. is provided in Appendix C. There were no findings of non-compliance, only areas of concern noted.

9. The Status of all Actions Under any CAP that Was Submitted During the Reporting Period

All actions items identified in the CAP submitted in 2010 were completed per the schedule provided in the preliminary CAP.

10. The Documents and Information required under Subsection N of Section V (Compliance Requirements)

The TO Bypass Incident Reports are included in Appendix D.

Certification Statement and Signature

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is, to the best of my knowledge and belief, true, accurate, and complete.

Site Director
Brian Bence

Signature

7/24/2011
Date

APPENDIX A

SEMI-ANNUAL HON, PHARMA, BENZENE REPORTS

SEMIANNUAL EQUIPMENT LEAK REPORT FOR HON

REPORT PERIOD FROM: 07/01/2010 to 12/31/2010
PROCESS UNIT: Plant 27
PERMIT CONDITION: D.8.37.

Permit Condition D.8.37(a)(2)(i) and (ii)– VALVES IN GAS/VAPOR & LL SERVICE

3rd Quarter 2010

(1)	9	= THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.168(b).
(2)	0.56%	= THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(1).
(3)	0.59%	= THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(2).
(4)	1595	= THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(5)	0	= THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(6)	0	= THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (4)

4th Quarter 2010

(1)	10	= THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.168(b).
(2)	0.59%	= THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(1).
(3)	0.58%	= THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(2).
(4)	1699	= THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(5)	0	= THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(6)	0	= THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (4)

Permit Condition D.8.37(a)(2)(iii) and (iv)– PUMPS IN LL SERVICE

July

(7)	0	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8)	3	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9)	0%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10)	2.44%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11)	39	= THE NUMBER OF LL PUMPS MONITORED.
(12)	0	= THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

August

(7)	0	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8)	2	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9)	0%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10)	2.44%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11)	39	= THE NUMBER OF LL PUMPS MONITORED.
(12)	0	= THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

September

(7)	0	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8)	1	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9)	0%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10)	2.44%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11)	40	= THE NUMBER OF LL PUMPS MONITORED.
(12)	1	= THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

October

(7)	0	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8)	0	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9)	0%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10)	1.63%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11)	43	= THE NUMBER OF LL PUMPS MONITORED.
(12)	0	= THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

November

(7)	0	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8)	1	= THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9)	0%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10)	0.41%	= THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11)	43	= THE NUMBER OF LL PUMPS MONITORED.
(12)	0	= THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

* See section below for explanation on delay of repair

SEMIANNUAL EQUIPMENT LEAK REPORT FOR HON (Cont.)

REPORT PERIOD FROM: 07/01/2010 to 12/31/2010
PROCESS UNIT: Plant 27
PERMIT CONDITION: D.8.37.

Permit Condition D.8.37(a)(2)(iii) and (iv)– PUMPS IN LL SERVICE (cont.)

December
(7) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 4.55% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 0.76% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

Permit Condition D.8.37(a)(2)(v) and (vi) – CONNECTORS IN GAS/VAPOR & LL SERVICE

2nd Half 2010
(13) 19 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS DETECTED VIA 63.174(a).
(14) 0.26% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS VIA 63.174(i)(2).
(15) 7415 = THE NUMBER OF GAS/VAPOR & LL CONNECTORS MONITORED.
(16) 5 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*
(17) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE CONNECTORS INCLUDED IN (15).
* See section below for explanation on delay of repairs

40 CFR 63.182(d)(2)(vii) and (viii)– AGITATORS IN LL SERVICE

July
(18) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a).
(19) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(b)
(20) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(21) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

August
(18) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a).
(19) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(b)
(20) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(21) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS .

September
(18) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a).
(19) 1 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(b)
(20) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(21) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS .

October
(18) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a).
(19) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(b)
(20) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(21) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS .

November
(18) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a).
(19) 1 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(b)
(20) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(21) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS .

December
(18) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a).
(19) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(b)
(20) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(21) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS .

Permit Condition D.8.37(a)(2)(vii) - DELAY OF REPAIRS

One pump could not be repaired within 15 days because a process unit shutdown was needed. Three connectors required a process unit shutdown to make the repairs. Two connectors were taken out of service to repair and the repairs to longer than 15 days.

SEMIANNUAL EQUIPMENT LEAK REPORT FOR HON (Cont.)

REPORT PERIOD FROM: 07/01/2010 to 12/31/2010
PROCESS UNIT: Plant 27
PERMIT CONDITION: D.8.37.

Permit Condition D.8.37(a)(2)(viii) - MONITORING RESULTS FOR 63.164(i), 63.165(a), and 63.172(f)
40 CFR 63.164(i), 63.165(a), and 63.172(f) are not applicable at this time.

Permit Condition D.8.37(a)(2)(ix)
No report at this time.

Permit Condition D.8.37(a)(2)(x)
No change in connector monitoring at this time.

Permit Condition D.37.(a)(3)
A revised table of equipment subject to monitoring and their monitoring frequencies is provided below.

Process Group Identification	Type of Equipment	Number of each Equipment	Method of Compliance
Plant 27	Pumps	44	Monthly leak detection and repair program
Plant 27	Agitators	2	Monthly leak detection and repair program
Plant 27	Valves	1693	Quarterly leak detection and repair program
Plant 27	Difficult to Monitor Valves	6	Annual leak detection and repair program
Plant 27	Connectors	7309	Semi-Annual leak detection and repair program
Plant 27	Difficult to Monitor Connectors	106	Annual leak detection and repair program

Revised pump count by adding 4 pumps in October that were previously not in hazardous air pollutant service. During the months of July, August, October, and November one pump was out of service and was not monitored. Revised agitator counts because 1 agitator was taken out of hazardous air pollutant service and is no longer subject to monitoring. In the 3rd quarter 10 valves were out of service and not monitored and 6 valves are identified as difficult to monitor. Revised valve count due to adding 102 valves that were previously not in hazardous air pollutant service and retired 23 valves. Revised the 2nd quarter 2010 monitoring for valves, because the number of valves reported monitored was 1629 instead of the 1620 that were actually monitored.. Revised the connector count by adding 651 connectors that were previously not in hazardous air pollutant service. Revised the 1st half 2010 monitoring for connectors, because the number of connectors reported monitored was 6891 instead of the 6658 that were actually monitored.

<u>2nd Quarter 2010</u>
(1) 10 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.168(b).
(2) 0.62% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(1).
(3) 0.81% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(2).
(4) 1620 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(5) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(6) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (4)

<u>1st Half 2010</u>
(13) 17 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS DETECTED VIA 63.174(a).
(14) 0.23% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS VIA 63.174(i)(2).
(15) 6658 = THE NUMBER OF GAS/VAPOR & LL CONNECTORS MONITORED.
(16) 9 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(17) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE CONNECTORS INCLUDED IN (15).

SEMIANNUAL EQUIPMENT LEAK REPORT FOR PHARMA MACT

REPORT PERIOD FROM: 07/01/2010 to 12/31/2010
PROCESS UNIT: Plant 41
Permit Condition: D.11.14.(e)

63.1255(h)(3)(ii)(A) & (B) – VALVES IN GAS/VAPOR & LL SERVICE

3rd Quarter

(1) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.1255(e)(3).
(2) 0% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES AS CALCULATED VIA 63.1255(e)(6).
(3) 384 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(4) 2 = THE NUMBER OF LEAKING LL VALVES VISUALLY LEAKING
(5) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(6) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (4).

4th Quarter

(1) 5 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.1255(e)(3).
(2) 1.33% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES AS CALCULATED VIA 63.1255(e)(6).
(3) 377 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(4) 0 = THE NUMBER OF LEAKING LL VALVES VISUALLY LEAKING
(5) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(6) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (4).

63.1255(e)(5)(vi)(A)

There were no valve reassignments this reporting period.

63.1255(e)(5)(vi)(B)

$\%V_{LO} = 0.66\%$

63.1255(h)(3)(ii)(C) & (D) – PUMPS IN LL SERVICE

July

(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(8) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(9) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(10) 12 = THE NUMBER OF LL PUMPS MONITORED.
(11) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

August

(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(9) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(10) 12 = THE NUMBER OF LL PUMPS MONITORED.
(11) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

September

(7) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(9) 8.33% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(10) 12 = THE NUMBER OF LL PUMPS MONITORED.
(11) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

October

(7) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(8) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(9) 8.33% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(10) 12 = THE NUMBER OF LL PUMPS MONITORED.
(11) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

November

(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(9) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(10) 12 = THE NUMBER OF LL PUMPS MONITORED.
(11) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

SEMIANNUAL EQUIPMENT LEAK REPORT FOR PHARMA MACT (CONT.)

REPORT PERIOD FROM: 07/01/2010 to 12/31/2010
PROCESS UNIT: Plant 41
Permit Condition: D.11.14.(e)

63.1255(h)(3)(ii)(C) & (D) – PUMPS IN LL SERVICE

December
(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(9) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(10) 12 = THE NUMBER OF LL PUMPS MONITORED.
(11) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

63.1255(h)(3)(ii)(C) & (D) – AGITATORS IN LL SERVICE

July
(12) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(14) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

August
(12) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(14) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

September
(12) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(14) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

October
(12) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(14) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

November
(12) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(14) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

December
(12) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(14) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

63.1255(h)(3)(ii)(E) & (F) – COMPRESSORS

There are no compressors in HAP service. Therefore this section is not applicable.

63.1255(h)(3)(ii)(G) & (H) – CONNECTORS IN GAS/VAPOR & LL SERVICE

(16) 5 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS DETECTED VIA 63.174(a)(1) and (2).
(17) 0.43% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS AS CALCULATED BY 63.174(i).
(18) 1882 = THE NUMBER OF GAS/VAPOR & LL CONNECTORS MONITORED.
(19) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(20) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE CONNECTORS INCLUDED IN (15).
(21) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS DETECTED VISUALLY

SEMIANNUAL EQUIPMENT LEAK REPORT FOR PHARMA MACT (CONT.)

REPORT PERIOD FROM: 07/01/2010 to 12/31/2010
PROCESS UNIT: Plant 41
Permit Condition: D.11.14.(e)

63.1255(h)(3)(ii)(I) - DELAY OF REPAIRS
There was no delay of repairs during this reporting period.

63.1255(h)(3)(ii)(J) – MONITORING RESULTS FOR 63.164(i), 63.165(a), and 63.172(f)
40 CFR 63.164(i), 63.165(a), and 63.172(f) are not applicable at this time.

63.1255(h)(3)(ii)(K) – INITIATION OF A MONTHLY MONITORING PROGRAM UNDER 63.1255(c)(4)(ii) or 63.1255(e)(4)(i)
A monthly monitoring program under 63.1255(c)(4)(ii) or 63.1255(e)(4(i) is not required at this time.

63.1255(h)(3)(ii)(L) – CHANGE IN CONNECTOR MONITORING PER 63.174(c)
Monitoring of connectors that have been opened or had the seal broken will be done in accordance with 63.174.(c)(1)(ii). This does not apply to connectors that are repaired in accordance with D.11.4.

63.1255(h)(3)(iii)
This requirement is not applicable at this time, since Vertellus does not operate any batch processes.

**63.1255(h)(3)(iv) **
A revised table of equipment subject to monitoring and their monitoring frequencies is provided below.

Process Group Identification	Type of Equipment	Number of each Equipment	Method of Compliance
Plant 41	Valves	382	Quarterly leak detection and repair program
Plant 41	Difficult to Monitor Valves	2	Annual leak detection and repair program
Plant 41	Connectors	1827	Semi-Annual leak detection and repair program
Plant 41	Difficult to Monitor Connectors	19	Annual leak detection and repair program

Revised valve count is due to adding three valves that were previously not in hazardous air pollutant service. During the 4th quarter 3 valves were out of service and not monitored and 2 valves are identified as difficult to monitor. Revised connector count due to adding eight connectors that were previously not in hazardous air pollutant service . There are 19 connectors identified as difficult to monitor. Revised 2nd quarter monitoring results for valves because it was reported that 383 valves were monitored when actually it was only 381. Revised the 1st semiannual monitoring results for connectors, because the number of connectors reported monitored was 1902 instead of the 1819 that was actually monitored.

2nd Quarter 2010
(1) 1 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.1255(e)(3).
(2) 0.26% =THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES AS CALCULATED VIA 63.1255(e)(6).
(3) 381 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(4) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(5) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (1).
1st Half 2010
(15) 4 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS DETECTED VIA 63.174(a)(1) and (2).
(16) 0.27% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS AS CALCULATED BY 63.174(i).
(17) 1819 = THE NUMBER OF GAS/VAPOR & LL CONNECTORS MONITORED.
(18) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(19) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE CONNECTORS INCLUDED IN (15).

SEMIANNUAL EQUIPMENT LEAK REPORT FOR HON

REPORT PERIOD FROM: 01/01/2011 to 06/30/2011
PROCESS UNIT: Plant 27
PERMIT CONDITION: D.8.37.

Permit Condition D.8.37(a)(2)(i) and (ii)– VALVES IN GAS/VAPOR & LL SERVICE

1st Quarter 2011

(1) 7 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.168(b).
(2) 0.41% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(1).
(3) 0.59% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(2).
(4) 1697 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(5) 1 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.*
(6) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (1)

2nd Quarter 2011

(1) 11 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.168(b).
(2) 0.65% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(1).
(3) 0.60% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES VIA 63.168(e)(2).
(4) 1695 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(5) 2 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.*
(6) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (1)

Permit Condition D.8.37(a)(2)(iii) and (iv)– PUMPS IN LL SERVICE

January

(7) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 2.27% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 1.14% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

February

(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 0.00% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 1.14% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

March

(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 0.0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 1.14% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

April

(7) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 2.27% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 1.52% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

May

(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 0.0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 1.52% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 1 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

*See delay of repair explanations.

SEMIANNUAL EQUIPMENT LEAK REPORT FOR HON (Cont.)

REPORT PERIOD FROM: 01/01/2011 to 06/30/2011
PROCESS UNIT: Plant 27
PERMIT CONDITION: D.8.37.

Permit Condition D.8.37(a)(2)(iii) and (iv)– PUMPS IN LL SERVICE (cont.)

June
(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(1) AND 63.163(b)(2).
(8) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.163(b)(3)
(9) 0.0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(4).
(10) 0.76% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.163(d)(2).
(11) 44 = THE NUMBER OF LL PUMPS MONITORED.
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*

40 CFR 63.173– AGITATORS IN LL SERVICE

January
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a)
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.167(b)
(15) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

February
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a)
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.167(b)
(15) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

March
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a)
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.167(b)
(15) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

April
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a)
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.167(b)
(15) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

May
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a)
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.167(b)
(15) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

June
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.173(a)
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.167(b)
(15) 2 = THE NUMBER OF LL AGITATORS MONITORED.
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS

Permit Condition D.8.37(a)(2)(v) and (vi) – CONNECTORS IN GAS/VAPOR & LL SERVICE

(17) 23 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS DETECTED VIA 63.174(a).
(18) 0.31% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS VIA 63.174(i)(2).
(19) 7403 = THE NUMBER OF GAS/VAPOR & LL CONNECTORS MONITORED.
(20) 5 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.*
(21) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE CONNECTORS INCLUDED IN (17).

*See delay of repair explanations.

SEMIANNUAL EQUIPMENT LEAK REPORT FOR HON (Cont.)

REPORT PERIOD FROM: 01/01/2011 to 06/30/2011
PROCESS UNIT: Plant 27
PERMIT CONDITION: D.8.37.

Permit Condition D.8.37(a)(2)(vii) - DELAY OF REPAIRS
There were two valves that were put on a delay of repair list because process operations required a shutdown to fix. A third valve was taken out of HAP service. There was one pump that put on a delay of repair list because replacement parts were not available within the 5/15 day repair timeframes and it was taken out of HAP service. There were five connectors that were put on the delay of repairs list because process operations required a shutdown to fix.

Permit Condition D.8.37(a)(2)(viii) - MONITORING RESULTS FOR 63.164(i), 63.165(a), and 63.172(f)
40 CFR 63.164(i), 63.165(a), and 63.172(f) are not applicable at this time.

Permit Condition D.8.37(a)(2)(ix)
No report at this time.

Permit Condition D.8.37(a)(2)(x)
Monitoring of connectors that have been opened or had the seal broken will be done in accordance with D.8.16.(c)(1)(ii). This does not apply to connectors that are repaired in accordance with D.8.16.(d)..

Permit Condition D.8.37(a)(3)
A revised table of equipment subject to monitoring and their monitoring frequencies is provided below.

Process Group Identification	Type of Equipment	Number of each Equipment	Method of Compliance
Plant 27	Valves	1695	Quarterly leak detection and repair program
Plant 27	Connectors	7403	Semi-Annual leak detection and repair program
Plant 27	Difficult to Monitor Connectors	68	Annual leak detection and repair program

SEMIANNUAL EQUIPMENT LEAK REPORT FOR PHARMA MACT

REPORT PERIOD FROM: 01/01/2011 to 06/30/2011
PROCESS UNIT: Plant 41
Permit Condition: D.11.14.(e)

<u>63.1255(h)(3)(ii)(A) & (B) – VALVES IN GAS/VAPOR & LL SERVICE</u>

<u>1st Quarter 2011</u>
(1) 5 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.1255(e)(3).
(2) 1.33% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES AS CALCULATED VIA 63.1255(e)(6).
(3) 374 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(4) 1 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.*
(5) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (1).

<u>2nd Quarter 2011</u>
(1) 2 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES DETECTED VIA 63.1255(e)(3).
(2) 0.55% =THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE VALVES AS CALCULATED VIA 63.1255(e)(6).
(3) 365 = THE NUMBER OF GAS/VAPOR & LL VALVES MONITORED.
(4) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL VALVES THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(5) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE VALVES INCLUDED IN (1).

<u>63.1255(e)(5)(vi)(A)</u>
There were no valve reassignments this reporting period.

<u>63.1255(e)(5)(vi)(B)</u>
$\%V_{LO}$ = 0.94%

<u>63.1255(h)(3)(ii)(C) & (D) – PUMPS IN LL SERVICE</u>
<u>January</u>
(6) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(7) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(8) 16.67% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv)
(9) 12 = THE NUMBER OF LL PUMPS MONITORED.
(10) 7.67% = THE ROLLING 12 MONTH AVERAGE PERCENT LEAKING AS CALCUALTED BY 63.1255(c)(4)(ii)
(11) 1 = THE ROLLING 12 MONTH NUMBER OF LEAKING PUPMS AS CALCULATED BY 63.1255(c)(4)(ii)
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
<u>February</u>
(6) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(7) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(8) 8.33% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(9) 12 = THE NUMBER OF LL PUMPS MONITORED.
(10) 6.94% = THE ROLLING 12 MONTH AVERAGE PERCENT LEAKING AS CALCUALTED BY 63.1255(c)(4)(ii)
(11) 1 = THE ROLLING 12 MONTH NUMBER OF LEAKING PUPMS AS CALCULATED BY 63.1255(c)(4)(ii)
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
<u>March</u>
(6) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(7) 3 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(8) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(9) 12 = THE NUMBER OF LL PUMPS MONITORED.
(10) 6.94% = THE ROLLING 12 MONTH AVERAGE PERCENT LEAKING AS CALCUALTED BY 63.1255(c)(4)(ii)
(11) 1 = THE ROLLING 12 MONTH NUMBER OF LEAKING PUPMS AS CALCULATED BY 63.1255(c)(4)(ii)
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
<u>April</u>
(6) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(7) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(8) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(9) 12 = THE NUMBER OF LL PUMPS MONITORED.
(10) 4.86% = THE ROLLING 12 MONTH AVERAGE PERCENT LEAKING AS CALCUALTED BY 63.1255(c)(4)(ii)
(11) 1 = THE ROLLING 12 MONTH NUMBER OF LEAKING PUPMS AS CALCULATED BY 63.1255(c)(4)(ii)
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

- See delay of repair explanations

SEMIANNUAL EQUIPMENT LEAK REPORT FOR PHARMA MACT (CONT.)

REPORT PERIOD FROM: 01/01/2011 to 06/30/2011
PROCESS UNIT: Plant 41
Permit Condition: D.12.15.(e)

63.1255(h)(3)(ii)(C) & (D) – PUMPS IN LL SERVICE (cont.)

May
(6) 2 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(7) 1 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(8) 16.67% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(9) 12 = THE NUMBER OF LL PUMPS MONITORED.
(10) 6.25% = THE ROLLING 12 MONTH AVERAGE PERCENT LEAKING AS CALCUALTED BY 63.1255(c)(4)(ii)
(11) 1 = THE ROLLING 12 MONTH NUMBER OF LEAKING PUPMS AS CALCULATED BY 63.1255(c)(4)(ii)
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

June
(6) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(B).
(7) 0 = THE NUMBER OF LEAKING LL PUMPS DETECTED VIA 63.1255(c)(2)(iii)
(8) 0% = THE PERCENT OF LEAKING LL SERVICE PUMPS AS CALCULATED BY 63.1255(c)(4)(iv).
(9) 12 = THE NUMBER OF LL PUMPS MONITORED.
(10) 4.86% = THE ROLLING 12 MONTH AVERAGE PERCENT LEAKING AS CALCUALTED BY 63.1255(c)(4)(ii)
(11) 1 = THE ROLLING 12 MONTH NUMBER OF LEAKING PUPMS AS CALCULATED BY 63.1255(c)(4)(ii)
(12) 0 = THE NUMBER OF LEAKING LL PUMPS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

63.1255(h)(3)(ii)(C) & (D) – AGITATORS IN LL SERVICE

January
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(15) 1 = THE NUMBER OF LL AGITATORS MONITORED
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

February
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(15) 1 = THE NUMBER OF LL AGITATORS MONITORED
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

March
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(15) 1 = THE NUMBER OF LL AGITATORS MONITORED
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

April
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(15) 1 = THE NUMBER OF LL AGITATORS MONITORED
(15) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

May
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(15) 1 = THE NUMBER OF LL AGITATORS MONITORED
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

June
(13) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(i) AND (c)(2)(ii)(A).
(14) 0 = THE NUMBER OF LEAKING LL AGITATORS DETECTED VIA 63.1255(c)(2)(iii).
(15) 1 = THE NUMBER OF LL AGITATORS MONITORED
(16) 0 = THE NUMBER OF LEAKING LL AGITATORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.

63.1255(h)(3)(ii)(E) & (F) – COMPRESSORS

There are no compressors in HAP service. Therefore this section is not applicable.

SEMIANNUAL EQUIPMENT LEAK REPORT FOR PHARMA MACT (CONT.)

REPORT PERIOD FROM: 01/01/2011 to 06/30/2011
PROCESS UNIT: Plant 41
Permit Condition: D.12.15.(e)

63.1255(h)(3)(ii)(G) & (H) – CONNECTORS IN GAS/VAPOR & LL SERVICE

(17) 11 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS DETECTED VIA 63.174(a)(1) and (2).
(18) 0.65% = THE PERCENT OF LEAKING GAS/VAPOR & LL SERVICE CONNECTORS AS CALCULATED BY 63.174(i).
(19) 1699 = THE NUMBER OF GAS/VAPOR & LL CONNECTORS MONITORED.
(20) 0 = THE NUMBER OF LEAKING GAS/VAPOR & LL CONNECTORS THAT WERE NOT REPAIRED WITHIN 15 DAYS.
(21) 0 = THE NUMBER OF NONREPAIRABLE GAS/VAPOR & LL SERVICE CONNECTORS INCLUDED IN (15).

63.1255(h)(3)(ii)(I) - DELAY OF REPAIRS

One valve was put on the delay of repair list because it required a process operations shutdown to repair.

63.1255(h)(3)(ii)(J) – MONITORING RESULTS FOR 63.164(i), 63.165(a), and 63.172(f)

40 CFR 63.164(i), 63.165(a), and 63.172(f) are not applicable at this time.

63.1255(h)(3)(ii)(K) – INITIATION OF A MONTHLY MONITORING PROGRAM UNDER 63.1255(c)(4)(ii) or 63.1255(e)(4)(i)

A monthly monitoring program under 63.1255(c)(4)(ii) or 63.1255(e)(4(i) is not required at this time.

63.1255(h)(3)(ii)(L) – CHANGE IN CONNECTOR MONITORING PER 63.174(c)

Monitoring of connectors that have been opened or had the seal broken will be done in accordance with 63.174.(c)(1)(ii). This does not apply to connectors that are repaired in accordance with D.11.4.

63.1255(h)(3)(iii)

This requirement is not applicable at this time, since Vertellus does not operate any batch processes.

63.1255(h)(3)(iv)

A revised table of equipment subject to monitoring and their monitoring frequencies is provided below.

Process Group Identification	Type of Equipment	Number of each Equipment	Method of Compliance
Plant 41	Valves	365	Quarterly leak detection and repair program
Plant 41	Difficult to Monitor Valves	3	Annual leak detection and repair program
Plant 41	Connectors	1699	Semi-Annual leak detection and repair program
Plant	Difficult to Monitor Connectors	19	Annual leak detection and repair program

APPENDIX B

REPORT OF EQUIPMENT LEAKS SUBJECT TO SUBPART G

VALVES

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	LLValve	LLPacking	LowLeakDate	Comments
41-CYANO	00019	90000641	VALVE	MT-600.211	3/18/2011	727		VP	TP	3/23/2011	3/23/2011	9	RPD	3/23/2011	TRUE	FALSE	4/27/2011	
41-CYANO	00019	90000641	VALVE	MT-600.211	3/18/2011	727		VP			3/29/2011		S/D	3/29/2011	TRUE	FALSE	4/27/2011	
41-CYANO	00019	90000641	VALVE	MT-600.211	3/18/2011	727		VP	RV	4/26/2011	4/27/2011	34	RPD	4/27/2011	TRUE	FALSE	4/27/2011	
41-CYANO	00059	90000142	VALVE	PP-213B	7/28/2010		VSBL	BON	TBON	7/28/2010	7/28/2010	95	RPD	7/28/2010	TRUE	FALSE	8/10/2010	
41-CYANO	00167	90000840	VALVE	PP-006D	6/7/2011	44500		VP	RV	6/10/2011	6/10/2011	10	RPD	6/10/2011	TRUE	FALSE	6/10/2011	
41-CYANO	00170	90000612	VALVE	PP-006D	3/25/2011	1315		VP	TP	3/29/2011	3/29/2011	78	RPD	3/29/2011	TRUE	FALSE	4/27/2011	
41-CYANO	00170	90000612	VALVE	PP-006D	3/25/2011	1315		VP			4/21/2011		S/D	4/21/2011	TRUE	FALSE	4/27/2011	
41-CYANO	00170	90000612	VALVE	PP-006D	3/25/2011	1315		VP	RV	4/26/2011	4/27/2011	8	RPD	4/27/2011	TRUE	FALSE	4/27/2011	
41-CYANO	00215	90000606	VALVE	PP-010A	3/21/2011	635		VP	TP	3/23/2011	3/23/2011	1318	OPN	3/23/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00215	90000606	VALVE	PP-010A	3/21/2011	635		VP			3/29/2011		S/D	3/29/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00215	90000606	VALVE	PP-010A	3/21/2011	635		VP	RV	6/20/2011	6/21/2011	11	RPD	6/21/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00235	90000803	VALVE	PP-034A	6/8/2011	540		VP	TP	6/13/2011	6/13/2011	9	RPD	6/13/2011	FALSE	FALSE		On DORL-shutdown needed
41-CYANO	00267	90000438	VALVE	MS-6	12/16/2010	2040		VP	TP	12/17/2010	12/17/2010	12	RPD	12/17/2010	TRUE	FALSE	6/16/2011	
41-CYANO	00307	90000439	VALVE	MS-034A	12/16/2010	878		VP	TP	12/20/2010	12/21/2010	94	RPD	12/21/2010	TRUE	FALSE	6/20/2011	
41-CYANO	00307	90000439	VALVE	MS-034A	12/16/2010	878		VP			1/7/2011		S/D	1/7/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00307	90000439	VALVE	MS-034A	12/16/2010	878		VP	RV	6/20/2011	6/21/2011	10	RPD	6/21/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00308	90000460	VALVE	MS-034A	12/16/2010	647		BON	WO	12/16/2010	12/16/2010	646	OPN	12/16/2010	TRUE	FALSE	6/20/2011	
41-CYANO	00308	90000460	VALVE	MS-034A	12/16/2010	647		BON	TBON	12/30/2010	12/30/2010	996	OPN	12/30/2010	TRUE	FALSE	6/20/2011	
41-CYANO	00308	90000460	VALVE	MS-034A	12/16/2010	647		BON			12/30/2010		S/D	12/30/2010	TRUE	FALSE	6/20/2011	
41-CYANO	00308	90000460	VALVE	MS-034A	12/16/2010	647		BON	RV	6/20/2011	6/21/2011	9	RPD	6/21/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00310	90000461	VALVE	AS-008	12/16/2010	836		VP	TP	12/17/2010	12/17/2010	40	RPD	12/17/2010	TRUE	FALSE	6/20/2011	
41-CYANO	00310	90000461	VALVE	AS-008	12/16/2010	836		VP	RV	6/20/2011	6/21/2011	7	RPD	6/21/2011	TRUE	FALSE	6/20/2011	
41-CYANO	00320	90000462	VALVE	MS-034A	12/16/2010	881		VP	TP	12/16/2010	12/16/2010	1215	OPN	12/16/2010	FALSE	TRUE	12/23/2010	
41-CYANO	00320	90000462	VALVE	MS-034A	12/16/2010	881		VP	RP	12/23/2010	12/28/2010	6	RPD	12/28/2010	FALSE	TRUE	12/23/2010	
41-CYANO	01726	90000610	VALVE	MT-600.11	3/21/2011	1445		VP	TP	3/23/2011	3/23/2011	414	RPD	3/23/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01726	90000610	VALVE	MT-600.11	3/21/2011	1445		VP			3/30/2011		S/D	3/30/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01726	90000610	VALVE	MT-600.11	3/21/2011	1445		VP	RV	4/26/2011	5/4/2011	2	RPD	5/4/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01728	90000611	VALVE	MT-600.11	3/21/2011	615		VP	TP	3/23/2011	3/23/2011	69	RPD	3/23/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01728	90000611	VALVE	MT-600.11	3/21/2011	615		VP			3/30/2011		S/D	3/30/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01728	90000611	VALVE	MT-600.11	3/21/2011	615		VP	RV	4/26/2011	5/4/2011	2	RPD	5/4/2011	TRUE	FALSE	4/26/2011	
27-PYRID	02003	90000201	VALVE	TK-263	8/31/2010	614		VP	RV	9/2/2010	9/3/2010	6	RPD	9/3/2010	TRUE	FALSE	9/2/2010	
27-PYRID	02014	90000424	VALVE	PP-035	12/14/2010	5223		VP	TP	12/16/2010	12/16/2010	938	OPN	12/16/2010	TRUE	FALSE	12/21/2010	
27-PYRID	02014	90000424	VALVE	PP-035	12/14/2010	5223		VP	RV	12/21/2010	12/29/2010	4	RPD	12/29/2010	TRUE	FALSE	12/21/2010	
27-PYRID	02123	90000426	VALVE	TK-262	12/14/2010	1013		VP	TP	12/16/2010	12/16/2010	8	RPD	12/16/2010	TRUE	FALSE	12/14/2010	
27-PYRID	02144	90000623	VALVE	TK-262	4/6/2011	733		VP	TP	4/10/2011	4/11/2011	25	RPD	4/11/2011	TRUE	FALSE	5/3/2011	
27-PYRID	02144	90000623	VALVE	TK-262	4/6/2011	733		VP	RV	5/3/2011	5/4/2011	2	RPD	5/4/2011	TRUE	FALSE	5/3/2011	
27-PYRID	02150	90000427	VALVE	TK-262	12/14/2010	1469		VP	TP	12/16/2010	12/16/2010	47	RPD	12/16/2010	TRUE	FALSE	12/21/2010	
27-PYRID	02150	90000427	VALVE	TK-262	12/14/2010	1469		VP	RV	12/21/2010	12/29/2010	3	RPD	12/29/2010	TRUE	FALSE	12/21/2010	
27-PYRID	02165	90000428	VALVE	PP-032	12/14/2010	666		VP	TP	12/16/2010	12/16/2010	575	OPN	12/16/2010	TRUE	FALSE	12/21/2010	
27-PYRID	02165	90000428	VALVE	PP-032	12/14/2010	666		VP	RV	12/20/2010	12/21/2010	111	RPD	12/21/2010	TRUE	FALSE	12/21/2010	
27-PYRID	02179	90000624	VALVE	TK-260	4/6/2011	548		VP	TP	4/10/2011	4/11/2011	47	RPD	4/11/2011	TRUE	FALSE	5/9/2011	
27-PYRID	02179	90000624	VALVE	TK-260	4/6/2011	548		VP			5/3/2011		S/D	5/3/2011	TRUE	FALSE	5/9/2011	
27-PYRID	02179	90000624	VALVE	TK-260	4/6/2011	548		VP	RV	5/9/2011	5/9/2011	5	RPD	5/9/2011	TRUE	FALSE	5/9/2011	
27-PYRID	02221	90000470	VALVE	PP001A/B	1/17/2011	536		VP	TP	1/18/2011	1/18/2011	35	RPD	1/18/2011	TRUE	FALSE	1/19/2011	
27-PYRID	02221	90000470	VALVE	PP001A/B	1/17/2011	536		VP	RV	1/19/2011	1/19/2011	2	RPD	1/19/2011	TRUE	FALSE	1/19/2011	
27-PYRID	02339	90000203	VALVE	PP 230A/B	9/3/2010	731		VP	TP	9/8/2010	9/8/2010	602	OPN	9/8/2010	TRUE	FALSE	11/1/2010	
27-PYRID	02339	90000203	VALVE	PP 230A/B	9/3/2010	731		VP			9/9/2010		S/D	9/9/2010	TRUE	FALSE	11/1/2010	
27-PYRID	02339	90000203	VALVE	PP 230A/B	9/3/2010	731		VP	RV	11/1/2010	11/15/2010	4	RPD	11/15/2010	TRUE	FALSE	11/1/2010	
27-PYRID	02341	90000429	VALVE	PP 230A/B	12/14/2010	930		VP	TP	12/16/2010	12/16/2010	743	OPN	12/16/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02341	90000429	VALVE	PP 230A/B	12/14/2010	930		VP	N/A	12/29/2010	12/29/2010	5	RPD	12/29/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02341	90000429	VALVE	PP 230A/B	12/14/2010	930		VP	RV	1/11/2011	1/14/2011	2	RPD	1/14/2011	TRUE	FALSE	1/11/2011	
27-PYRID	02343	90000409	VALVE	PP 230A/B	1/14/2011	575		VP	TP	1/18/2011	1/18/2011	33	RPD	1/18/2011	FALSE	TRUE	1/31/2011	
27-PYRID	02343	90000409	VALVE	PP 230A/B	1/14/2011	575		VP	RP	1/31/2011	2/3/2011	2	RPD	2/3/2011	FALSE	TRUE	1/31/2011	
27-PYRID	02343	90000625	VALVE	PP 230A/B	4/6/2011	550		VP	TP	4/10/2011	4/11/2011	40	RPD	4/11/2011	FALSE	TRUE	1/31/2011	
27-PYRID	02345	90000430	VALVE	PP 230A/B	12/14/2010	729		VP	TP	12/16/2010	12/16/2010	48	RPD	12/16/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02345	90000430	VALVE	PP 230A/B	12/14/2010	729		VP	RV	1/11/2011	1/14/2011	1	RPD	1/14/2011	TRUE	FALSE	1/11/2011	
27-PYRID	02362	90000585	VALVE	PP 002A/B	3/17/2011	3545	VSBL	BON	TBON	3/20/2011	3/21/2011	4	RPD	3/21/2011	TRUE	FALSE	5/9/2011	
27-PYRID	02362	90000585	VALVE	PP 002A/B	3/17/2011	3545	VSBL	BON			4/11/2011		S/D	4/11/2011	TRUE	FALSE	5/9/2011	
27-PYRID	02362	90000585	VALVE	PP 002A/B	3/17/2011	3545	VSBL	BON	RV	5/9/2011	5/9/2011	5	RPD	5/9/2011	TRUE	FALSE	5/9/2011	

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	LLValve	LLPacking	LowLeakDate	Comments
27-PYRID	02369	90000410	VALVE	PP 002A/B	1/14/2011	551		VP	TP	1/18/2011	1/18/2011	3	RPD	1/18/2011	TRUE	FALSE	1/31/2011	
27-PYRID	02369	90000410	VALVE	PP 002A/B	1/14/2011	551		VP	RV	1/31/2011	2/2/2011	2	RPD	2/2/2011	TRUE	FALSE	1/31/2011	
27-PYRID	02372	90000431	VALVE	PP 002A/B	12/14/2010	777		VP	TP	12/16/2010	12/16/2010	4881	OPN	12/16/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02372	90000431	VALVE	PP 002A/B	12/14/2010	777		VP			12/29/2010		S/D	12/29/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02372	90000431	VALVE	PP 002A/B	12/14/2010	777		VP	RV	1/11/2011	1/14/2011	3	RPD	1/14/2011	TRUE	FALSE	1/11/2011	
27-PYRID	02384	90000421	VALVE	PP 002A/B	12/14/2010	478		VP	TP	12/16/2010	12/16/2010	441	OPN	12/16/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02384	90000421	VALVE	PP 002A/B	12/14/2010	478		VP			12/29/2010		S/D	12/29/2010	TRUE	FALSE	1/11/2011	
27-PYRID	02384	90000421	VALVE	PP 002A/B	12/14/2010	478		VP	RV	1/11/2011	1/14/2011	3	RPD	1/14/2011	TRUE	FALSE	1/11/2011	
27-PYRID	02455	90000642	VALVE	MT-620.212	4/7/2011	1260		VP	TP	4/10/2011	4/11/2011	585	OPN	4/11/2011	TRUE	FALSE	6/23/2011	
27-PYRID	02455	90000642	VALVE	MT-620.212	4/7/2011	1260		VP			4/20/2011		S/D	4/20/2011	TRUE	FALSE	6/23/2011	
27-PYRID	02455	90000642	VALVE	MT-620.212	4/7/2011	1260		VP	RV	6/22/2011	6/23/2011	3	RPD	6/23/2011	TRUE	FALSE	6/23/2011	
27-PYRID	02669	90000244	VALVE	pp622.270a	9/10/2010	688		VP	TP	9/15/2010	9/15/2010	565	OPN	9/15/2010	TRUE	FALSE	9/24/2010	
27-PYRID	02669	90000244	VALVE	pp622.270a	9/10/2010	688		VP	RV	9/24/2010	9/25/2010	68	RPD	9/25/2010	TRUE	FALSE	9/24/2010	
27-PYRID	02845	90000067	VALVE	PP622.102	8/9/2010	1030		VP	TP	8/10/2010	8/10/2010	161	RPD	8/10/2010	FALSE	TRUE	8/4/2010	
27-PYRID	02851	90000229	VALVE	PP622.102	9/14/2010	672		VP	TP	9/19/2010	9/20/2010	657	OPN	9/20/2010	FALSE	FALSE		Removed from service
27-PYRID	02851	90000229	VALVE	PP622.102	9/14/2010	672		VP			9/20/2010		S/D	9/20/2010	FALSE	FALSE		Removed from service
27-PYRID	02851	90000229	VALVE	PP622.102	9/14/2010	672		VP	ERHS	11/1/2010	11/15/2010	4	RPD	11/15/2010	FALSE	FALSE		Removed from service
27-PYRID	02909	90000123	VALVE	PP621.140B	7/16/2010	2959		OT	RV	7/17/2010	7/17/2010	4	RPD	7/17/2010	TRUE	FALSE	7/17/2010	
27-PYRID	02978	90000432	VALVE	PP 621.140	12/15/2010	4305		BON	WO	12/20/2010	12/21/2010	1674	OPN	12/21/2010	FALSE	FALSE		Valve removed
27-PYRID	02978	90000432	VALVE	PP 621.140	12/15/2010	4305		BON	TBOL	12/27/2010	12/28/2010	2	RPD	12/28/2010	FALSE	FALSE		Valve removed
27-PYRID	03044	90000261	VALVE	TT 622 110	9/16/2010	1053		VP	TP	9/19/2010	9/20/2010	77	RPD	9/20/2010	FALSE	TRUE	10/14/2010	
27-PYRID	03044	90000261	VALVE	TT 622 110	9/16/2010	1053		VP	RP	10/14/2010	10/15/2010	12	RPD	10/15/2010	FALSE	TRUE	10/14/2010	
27-PYRID	03044	90000480	VALVE	TT 622 110	2/7/2011	502		VP	TP	2/9/2011	2/9/2011	3	RPD	2/9/2011	FALSE	TRUE	10/14/2010	
27-PYRID	03062	90000433	VALVE	TT 622 104	12/15/2010	525		VP	WO	12/20/2010	12/21/2010	1796	OPN	12/21/2010	TRUE	FALSE	6/23/2011	
27-PYRID	03062	90000433	VALVE	TT 622 104	12/15/2010	525		VP	N/A	12/22/2010	12/23/2010	154	RPD	12/23/2010	TRUE	FALSE	6/23/2011	
27-PYRID	03224	90000541	VALVE	MT 621 004	2/15/2011	566		VP	TP	2/18/2011	2/18/2011	584	OPN	2/18/2011	TRUE	FALSE	3/8/2011	
27-PYRID	03224	90000541	VALVE	MT 621 004	2/15/2011	566		VP			2/18/2011		S/D	2/18/2011	TRUE	FALSE	3/8/2011	
27-PYRID	03224	90000541	VALVE	MT 621 004	2/15/2011	566		VP	RV	3/8/2011	3/11/2011	2	RPD	3/11/2011	TRUE	FALSE	3/8/2011	
27-PYRID	03308	90000500	VALVE	TT 610 007C	2/7/2011		VSBL	VP	TP	2/7/2011	2/8/2011	6	RPD	2/8/2011	TRUE	FALSE	3/7/2011	
27-PYRID	03308	90000500	VALVE	TT 610 007C	2/7/2011		VSBL	VP	RV	3/7/2011	3/11/2011	2	RPD	3/11/2011	TRUE	FALSE	3/7/2011	
27-PYRID	03319	90000740	VALVE	TT 610 007B	5/2/2011	901		BON	TBON	5/4/2011	5/5/2011	1038	OPN	5/5/2011	TRUE	FALSE	6/24/2011	
27-PYRID	03319	90000740	VALVE	TT 610 007B	5/2/2011	901		BON			5/17/2011		S/D	5/17/2011	TRUE	FALSE	6/24/2011	
27-PYRID	03319	90000740	VALVE	TT 610 007B	5/2/2011	901		BON	RV	6/22/2011	6/24/2011	1	RPD	6/24/2011	TRUE	FALSE	6/24/2011	
27-PYRID	03332	90000437	VALVE	TT 610 007A	12/15/2010	363		BON	TBON	12/20/2010	12/21/2010	6	RPD	12/21/2010	TRUE	FALSE	2/1/2011	
27-PYRID	03332	90000437	VALVE	TT 610 007A	12/15/2010	363		BON	RV	2/1/2011	2/8/2011	3	RPD	2/8/2011	TRUE	FALSE	2/1/2011	
27-PYRID	03453	90000741	VALVE	MR 621 012	5/2/2011	629		VP	TP	5/4/2011	5/5/2011	532	OPN	5/5/2011	TRUE	FALSE	5/10/2011	
27-PYRID	03453	90000741	VALVE	MR 621 012	5/2/2011	629		VP	RV	5/10/2011	5/10/2011	67	RPD	5/10/2011	TRUE	FALSE	5/10/2011	
27-PYRID	03506	90000264	VALVE	TT 610 007G	9/28/2010	306	VSBL	VP	TP	9/30/2010	10/1/2010	67	RPD	10/1/2010	TRUE	FALSE	11/2/2010	
27-PYRID	03565	90000266	VALVE	TT 610 007C	9/28/2010	991		VP	TP	9/30/2010	10/1/2010	287	OPN	10/1/2010	TRUE	FALSE	10/2/2010	
27-PYRID	03565	90000266	VALVE	TT 610 007C	9/28/2010	991		VP	RV	10/2/2010	10/4/2010	5	RPD	10/4/2010	TRUE	FALSE	10/2/2010	
27-PYRID	03575	90000183	VALVE	PP 308A	8/17/2010	268		VP	TP	8/22/2010	8/23/2010	832	OPN	8/23/2010	FALSE	TRUE	9/16/2010	
27-PYRID	03575	90000183	VALVE	PP 308A	8/17/2010	268		VP			8/30/2010		S/D	8/30/2010	FALSE	TRUE	9/16/2010	
27-PYRID	03575	90000183	VALVE	PP 308A	8/17/2010	268		VP	RP	9/16/2010	9/17/2010	30	RPD	9/17/2010	FALSE	TRUE	9/16/2010	
27-PYRID	03575		VALVE	PP 308A	8/23/2010	832		VP	WASH	8/27/2010	8/27/2010	558	OPN	8/27/2010	FALSE	TRUE	9/16/2010	
27-PYRID	03575		VALVE	PP 308A	8/23/2010	832		VP			8/30/2010		S/D	8/30/2010	FALSE	TRUE	9/16/2010	
27-PYRID	03575		VALVE	PP 308A	8/23/2010	832		VP	RP	9/16/2010	9/17/2010	30	RPD	9/17/2010	FALSE	TRUE	9/16/2010	
27-PYRID	03575	90000549	VALVE	PP 308A	2/22/2011	571		VP	TP	2/25/2011	2/25/2011	29	RPD	2/25/2011	FALSE	TRUE	9/16/2010	
27-PYRID	03575	90000721	VALVE	PP 308A	5/3/2011	554		VP	TP	5/5/2011	5/5/2011	603	OPN	5/5/2011	FALSE	TRUE	9/16/2010	NEW CERTIFIED LL PACKING AGAIN
27-PYRID	03575	90000721	VALVE	PP 308A	5/3/2011	554		VP	RP	5/12/2011	5/12/2011	6	RPD	5/12/2011	FALSE	TRUE	9/16/2010	NEW CERTIFIED LL PACKING AGAIN
27-PYRID	03579	90000722	VALVE	PP 308A	5/3/2011	534		VP	TP	5/5/2011	5/5/2011	101	RPD	5/5/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03579	90000722	VALVE	PP 308A	5/3/2011	534		VP	RV	5/16/2011	5/17/2011	2	RPD	5/17/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03583	90000723	VALVE	PP 308B	5/3/2011	6145		VP	TP	5/5/2011	5/5/2011	11	RPD	5/5/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03583	90000723	VALVE	PP 308B	5/3/2011	6145		VP	RV	5/16/2011	5/17/2011	1	RPD	5/17/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03585	90000725	VALVE	PP 308B	5/3/2011	9672		BON	TBON	5/5/2011	5/5/2011	37200	OPN	5/5/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03585	90000725	VALVE	PP 308B	5/3/2011	9672		BON	RV	5/16/2011	5/17/2011	2	RPD	5/17/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03604	90000729	VALVE	PP 308B	5/4/2011	560		VP	TP	5/9/2011	5/9/2011	78	OPN	5/9/2011	FALSE	TRUE	5/12/2011	
27-PYRID	03604	90000729	VALVE	PP 308B	5/4/2011	560		VP	RP	5/12/2011	5/12/2011	6	RPD	5/12/2011	FALSE	TRUE	5/12/2011	
27-PYRID	03796	90000382	VALVE	PP 604A	11/11/2010		VSBL	VP	RV	11/15/2010	11/15/2010	4	RPD	11/15/2010	TRUE	FALSE	11/15/2010	
27-PYRID	03829	90000221	VALVE	MT 603	8/19/2010	1302		VP	TP	8/23/2010	8/23/2010	4326	OPN	8/23/2010	TRUE	FALSE	11/3/2010	
27-PYRID	03829	90000221	VALVE	MT 603	8/19/2010	1302		VP	INJ	9/3/2010	9/3/2010	164	RPD	9/3/2010	TRUE	FALSE	11/3/2010	
27-PYRID	03829	90000221	VALVE	MT 603	8/19/2010	1302		VP			9/16/2010		S/D	9/16/2010	TRUE	FALSE	11/3/2010	

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	LLValve	LLPacking	LowLeakDate	Comments
27-PYRID	03829	90000221	VALVE	MT 603	8/19/2010	1302		VP	RV	11/3/2010	11/15/2010	7	RPD	11/15/2010	TRUE	FALSE	11/3/2010	
27-PYRID	03847	90000464	VALVE	MT 604	12/16/2010	620		VP	TP	12/20/2010	12/21/2010	134	RPD	12/21/2010	TRUE	FALSE	5/16/2011	
27-PYRID	03847	90000464	VALVE	MT 604	12/16/2010	620		VP			1/10/2011		S/D	1/10/2011	TRUE	FALSE	5/16/2011	
27-PYRID	03847	90000464	VALVE	MT 604	12/16/2010	620		VP	RV	5/16/2011	5/17/2011	2	RPD	5/17/2011	TRUE	FALSE	5/16/2011	
41-CYANO	01701A	90000609	VALVE	MT-600.13	3/21/2011	1008		VP	TP	3/22/2011	3/23/2011	88	RPD	3/23/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01701A	90000609	VALVE	MT-600.13	3/21/2011	1008		VP			3/30/2011		S/D	3/30/2011	TRUE	FALSE	4/26/2011	
41-CYANO	01701A	90000609	VALVE	MT-600.13	3/21/2011	1008		VP	RV	4/26/2011	5/4/2011	1	RPD	5/4/2011	TRUE	FALSE	4/26/2011	
27-PYRID	02611H	90000580	VALVE	TK254	3/6/2011		VSBL	VP	RV	3/9/2011	3/9/2011	4	RPD	3/9/2011	FALSE	FALSE		VALVE DRY LOCK FITTING VSBL LEAK

CONNECTORS/OEL

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	Comments
41-CYANO	00006.03	90000800	CONNECTOR	MT-600.213	6/1/2011	977		FLG	RG	6/6/2011	6/6/2011	21	RPD	6/6/2011	
41-CYANO	00053.01	90000644	SCONN	PP-213B	4/8/2011		VSBL	SC	TSC	4/10/2011	4/11/2011	1	RPD	4/11/2011	
41-CYANO	00061.06	90000604	SCONN	PP-213C	3/18/2011	1499		PLG	TPLG	3/23/2011	3/23/2011	3	RPD	3/23/2011	
41-CYANO	00072.04	90000820	SCONN	PP-211A	6/2/2011	660		U	TU	6/7/2011	6/8/2011	6	RPD	6/8/2011	
41-CYANO	00082.06	90000761	CONNECTOR	MT-600.215	5/24/2011	745		SC	TFIT	5/27/2011	5/27/2011	4	RPD	5/27/2011	
41-CYANO	00099.02	90000435	CONNECTOR	MT-600.235	12/15/2010	5135		CAP	TCAP	12/17/2010	12/17/2010	718	OPN	12/17/2010	
41-CYANO	00099.02	90000435	CONNECTOR	MT-600.235	12/15/2010	5135		CAP	TCAP	12/30/2010	12/30/2010	71	RPD	12/30/2010	
41-CYANO	00144.03	90000783	SCONN	AS-4	5/24/2011	265		SC	TFIT	5/27/2011	5/27/2011	4	RPD	5/27/2011	
41-CYANO	00147.03	90000185	CONNECTOR	AS-4	8/24/2010	1733		SC	TCON	8/25/2010	8/26/2010	39	RPD	8/26/2010	
41-CYANO	00175.03	90000613	CONNECTOR	PP-006C	3/25/2011	929		CAP	TCAP	3/29/2011	3/29/2011	197	RPD	3/29/2011	
41-CYANO	00213.04	90000186	SCONN	PP-010A	8/24/2010	13300		PLG	TPLG	8/25/2010	8/26/2010	1045	OPN	8/26/2010	
41-CYANO	00213.04	90000186	SCONN	PP-010A	8/24/2010	13300		PLG	RPLG	8/29/2010	8/30/2010	4	RPD	8/30/2010	
41-CYANO	00224.06	90000607	CONNECTOR	PP-010A/B	3/21/2011	741		CAP	TCAP	3/22/2011	3/23/2011	626	OPN	3/23/2011	
41-CYANO	00224.06	90000607	CONNECTOR	PP-010A/B	3/21/2011	741		CAP	TCAP	4/5/2011	4/5/2011	224	RPD	4/5/2011	
41-CYANO	00233.02	90000802	SCONN	PP-034A	6/8/2011	519		PLG	RPLG	6/13/2011	6/13/2011	7	RPD	6/13/2011	
41-CYANO	00238.03	90000804	CONNECTOR	PP-034A	6/8/2011	607		SC	TSC	6/13/2011	6/13/2011	13	RPD	6/13/2011	
41-CYANO	00242.04	90000805	SCONN	PP-034A	6/8/2011	989		U	RU	6/13/2011	6/13/2011	579	OPN	6/13/2011	
41-CYANO	00242.04	90000805	SCONN	PP-034A	6/8/2011	989		U	RU	6/16/2011	6/17/2011	71	RPD	6/17/2011	
41-CYANO	00268.01	90000815	SCONN	MS-6	6/9/2011	629		SC	TSC	6/10/2011	6/10/2011	507	OPN	6/10/2011	
41-CYANO	00268.01	90000815	SCONN	MS-6	6/9/2011	629		SC	RV	6/16/2011	6/17/2011	23	RPD	6/17/2011	
41-CYANO	01705.07	90000608	SCONN	MT-600.13	3/21/2011	710		CAP	TCAP	3/22/2011	3/23/2011	54	RPD	3/23/2011	
41-CYANO	01717.09	90000187	SCONN	PP-600.02X	8/26/2010	3747		U	RU	8/29/2010	8/30/2010	5	RPD	8/30/2010	
41-CYANO	01718.01	90000188	CONNECTOR	MT-600.12	8/26/2010	684		SC	ERHS	8/31/2010	9/1/2010	0	OPN	9/1/2010	
41-CYANO	01718.01	90000188	CONNECTOR	MT-600.12	8/26/2010	684		SC	RSC	9/10/2010	9/10/2010	0	RPD	9/10/2010	
41-CYANO	01718.02	90000188	CONNECTOR	MT-600.12	8/26/2010	665		SC	ERHS	8/31/2010	9/1/2010	0	OPN	9/1/2010	
41-CYANO	01718.02	90000188	CONNECTOR	MT-600.12	8/26/2010	665		SC	RSC	9/10/2010	9/10/2010	0	RPD	9/10/2010	
41-CYANO	01732.10	90000189	SCONN	MT-600.11	8/26/2010	564		TEE	RT	8/30/2010	8/30/2010	4	RPD	8/30/2010	
41-CYANO	01734.05	90000823	SCONN	MT-600.11	6/22/2011	5386		OT	RG	6/27/2011	6/27/2011	2	RPD	6/27/2011	
41-CYANO	01734.08	90000824	SCONN	MT-600.11	6/22/2011	510		OT	RG	6/27/2011	6/27/2011	2	RPD	6/27/2011	
41-CYANO	01742.01	90000825	SCONN	MT-600.11	6/22/2011	823		OT	RG	6/27/2011	6/27/2011	13	RPD	6/27/2011	
41-CYANO	01742.03	90000826	SCONN	MT-600.11	6/22/2011	587		OT	RG	6/27/2011	6/27/2011	8	RPD	6/27/2011	
41-CYANO	01742.04	90000762	SCONN	MT-600.11	5/24/2011	8042		U	TU	5/27/2011	5/27/2011	4486	OPN	5/27/2011	
41-CYANO	01742.04	90000762	SCONN	MT-600.11	5/24/2011	8042		U	RU	6/7/2011	6/7/2011	2	RPD	6/7/2011	
41-CYANO	01747.01	90000827	SCONN	MT-600.13	6/22/2011	4712		U	ERHS	6/27/2011	6/27/2011	4	RPD	6/27/2011	
27-PYRID	02007.06	90000401	SCONN	TK-263	12/8/2010		VSBL	SC	CL	12/8/2010	12/9/2010	6	OPN	12/9/2010	
27-PYRID	02007.06	90000401	SCONN	TK-263	12/8/2010		VSBL	SC			12/23/2010		OHS	12/23/2010	
27-PYRID	02007.06	90000401	SCONN	TK-263	12/8/2010		VSBL	SC	RC	2/9/2011	2/9/2011	35	RPD	2/9/2011	
27-PYRID	02017	90000202	CONNECTOR	PP-035	8/31/2010	654		SG	TBOL	9/2/2010	9/2/2010	142	RPD	9/2/2010	
27-PYRID	02042.04	90000425	CONNECTOR	TK-263	12/14/2010	2047		CAP	TCAP	12/16/2010	12/16/2010	37	RPD	12/16/2010	
27-PYRID	02076.03	90000601	CONNECTOR	TK-262	3/16/2011	852		FLG	TFLG	3/18/2011	3/18/2011	2475	OPN	3/18/2011	Out of organic service
27-PYRID	02076.03	90000601	CONNECTOR	TK-262	3/16/2011	852		FLG	TFLG	3/18/2011	3/18/2011	791	OPN	3/18/2011	
27-PYRID	02076.03	90000601	CONNECTOR	TK-262	3/16/2011	852		FLG			3/31/2011		S/D	3/31/2011	
27-PYRID	02076.03	90000601	CONNECTOR	TK-262	3/16/2011	852		FLG	RG	5/11/2011	5/11/2011	6	RPD	5/11/2011	
27-PYRID	02112.03	90000600	SCONN	TK-262	3/16/2011	777		SC	RPLG	3/18/2011	3/18/2011	2	RPD	3/18/2011	REPLACED SC WITH PLG. PLG IN SYSTEM AS 02112.01
27-PYRID	02142.06	90000402	SCONN		12/8/2010		VSBL	SC	CL	12/9/2010	12/9/2010	9	OPN	12/9/2010	
27-PYRID	02142.06	90000402	SCONN		12/8/2010		VSBL	SC			12/23/2010		OHS	12/23/2010	
27-PYRID	02142.06	90000402	SCONN		12/8/2010		VSBL	SC	RC	2/9/2011	2/10/2011	6	RPD	2/10/2011	

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	Comments
27-PYRID	02157.06	90000240	CONNECTOR	PP-032	9/2/2010	937		CAP	TCAP	9/3/2010	9/3/2010	5	RPD	9/3/2010	
27-PYRID	02162.01	90000241	SCONN	PP-032	9/2/2010	520		PLG	TPLG	9/3/2010	9/3/2010	3	RPD	9/3/2010	
27-PYRID	02183.06	90000583	CONNECTOR	TK-261	3/17/2011	674		SC	TSC	3/20/2011	3/21/2011	4	RPD	3/21/2011	
27-PYRID	02207.05	90000584	SCONN	TK-261	3/17/2011	854		U	TU	3/20/2011	3/21/2011	4	RPD	3/21/2011	
27-PYRID	02355.01	90000582	SCONN	PP 230A/B	3/17/2011	624		SC	TSC	3/20/2011	3/21/2011	4	RPD	3/21/2011	
27-PYRID	02414.02	90000205	SCONN	PP 002A/B	9/9/2010	1534		SC	TFIT	9/12/2010	9/13/2010	1160	OPN	9/13/2010	
27-PYRID	02414.02	90000205	SCONN	PP 002A/B	9/9/2010	1534		SC			9/14/2010		S/D	9/14/2010	
27-PYRID	02414.02	90000205	SCONN	PP 002A/B	9/9/2010	1534		SC	RSC	11/1/2010	11/15/2010	4	RPD	11/15/2010	
27-PYRID	02415.02	90000206	CONNECTOR	PP 002A/B	9/9/2010	543		FLG	TFLG	9/12/2010	9/13/2010	579	OPN	9/13/2010	
27-PYRID	02415.02	90000206	CONNECTOR	PP 002A/B	9/9/2010	543		FLG			9/14/2010		S/D	9/14/2010	
27-PYRID	02415.02	90000206	CONNECTOR	PP 002A/B	9/9/2010	543		FLG	RV	11/1/2010	11/15/2010	4	RPD	11/15/2010	
27-PYRID	02438.02	90000605	SCONN	MT-620.212	3/18/2011	681		SC	TSC	3/23/2011	3/23/2011	3	RPD	3/23/2011	
27-PYRID	02456.01	90000586	CONNECTOR	MT-620.212	3/22/2011	1372		FLG	TFLG	3/22/2011	3/23/2011	6	RPD	3/23/2011	
27-PYRID	02458.01	90000588	SCONN	MT-620.212	3/22/2011	800		FLG	TFLG	3/22/2011	3/23/2011	6	RPD	3/23/2011	
27-PYRID	02551.03	90000643	CONNECTOR	TK-244	4/7/2011	706		CAP	RC	4/10/2011	4/11/2011	2	RPD	4/11/2011	
27-PYRID	02622.04	90000465	CONNECTOR	pp622.242	12/16/2010	15000	NC	CAP	TCAP	12/16/2010	12/16/2010	13	RPD	12/16/2010	
27-PYRID	02622.04	90000660	CONNECTOR	pp622.242	4/8/2011	11300		CAP	RV	4/10/2011	4/11/2011	17300	OPN	4/11/2011	
27-PYRID	02622.04	90000660	CONNECTOR	pp622.242	4/8/2011	11300		CAP	RC	4/21/2011	4/21/2011	4	RPD	4/21/2011	
27-PYRID	02623.09	90000223	SCONN	pp622.242	9/10/2010	10000		SC	TSC	9/15/2010	9/15/2010	22400	OPN	9/15/2010	
27-PYRID	02623.09	90000223	SCONN	pp622.242	9/10/2010	10000		SC	RSC	9/25/2010	9/25/2010	3	RPD	9/25/2010	
27-PYRID	02653.06	90000466	CONNECTOR	pp622.256b	12/16/2010	115100	NC	CAP	TCAP	12/16/2010	12/16/2010	83	RPD	12/16/2010	
27-PYRID	02678.01	90000661	CONNECTOR	pp622.270a	4/13/2011	561		CAP	TCAP	4/15/2011	4/15/2011	16	RPD	4/15/2011	
27-PYRID	02751.05	90000224	SCONN	pp622.270b	9/13/2010	657		SC	TSC	9/15/2010	9/15/2010	16	RPD	9/15/2010	
27-PYRID	02753.03	90000225	CONNECTOR	pp622.270b	9/13/2010	14	VSBL	FLG	CL	9/17/2010	9/17/2010	4	RPD	9/17/2010	
27-PYRID	02778.03	90000640	CONNECTOR	622.244	3/22/2011	677		FLG	TFLG	3/23/2011	3/23/2011	634	OPN	3/23/2011	
27-PYRID	02778.03	90000640	CONNECTOR	622.244	3/22/2011	677		FLG	RG	3/24/2011	3/24/2011	1	RPD	3/24/2011	
27-PYRID	02794.02	90000594	CONNECTOR	622.242	3/22/2011	318		SC	TSC	3/23/2011	3/23/2011	15	RPD	3/23/2011	
27-PYRID	02839.07	90000662	SCONN	PP623.150	4/13/2011	776		PLG	RPLG	4/15/2011	4/15/2011	24	RPD	4/15/2011	
27-PYRID	02860.02	90000592	SCONN	PP622.045A	3/22/2011	2078		SC	RSC	3/22/2011	3/23/2011	4	RPD	3/23/2011	
27-PYRID	02860.04	90000593	CONNECTOR	PP622.045A	3/22/2011	1316		GAU	TG	3/23/2011	3/23/2011	3	RPD	3/23/2011	
27-PYRID	02890.08	90000663	SCONN	PP622.045B	4/13/2011	844		PLG	RPLG	4/15/2011	4/15/2011	3	RPD	4/15/2011	
27-PYRID	02935.05	90000664	SCONN	PP621.140A	4/13/2011	1016		PLG	RPLG	4/15/2011	4/15/2011	4	RPD	4/15/2011	
27-PYRID	02963.05	90000209	SCONN	PP 621.140	9/15/2010	805		SC	RSC	9/19/2010	9/20/2010	6	RPD	9/20/2010	
27-PYRID	03041.04	90000260	SCONN	TT 622 110	9/16/2010	351	VSBL	PLG	RPLG	9/19/2010	9/20/2010	7	RPD	9/20/2010	
27-PYRID	03042.03	90000122	SCONN	TT 622 110	7/16/2010	20800		TC	TCON	7/16/2010	7/16/2010	28200	OPN	7/16/2010	
27-PYRID	03042.03	90000122	SCONN	TT 622 110	7/16/2010	20800		TC			7/23/2010		S/D	7/23/2010	
27-PYRID	03042.03	90000122	SCONN	TT 622 110	7/16/2010	20800		TC	RCON	8/4/2010	8/9/2010	22	RPD	8/9/2010	
27-PYRID	03049.07	90000262	SCONN	TT 622 110	9/16/2010	678		PLG	TPLG	9/19/2010	9/20/2010	4	RPD	9/20/2010	
27-PYRID	03050.04	90000263	SCONN	TT 622 110	9/16/2010	4106		SC	RSC	9/19/2010	9/20/2010	3	RPD	9/20/2010	
27-PYRID	03216.03	90000300	CONNECTOR	MT 621 004	9/27/2010	581		SC	TSC	9/30/2010	10/1/2010	10	RPD	10/1/2010	
27-PYRID	03216.03	90000542	CONNECTOR	MT 621 004	2/15/2011	707		SC	TSC	2/18/2011	2/18/2011	714	OPN	2/18/2011	
27-PYRID	03216.03	90000542	CONNECTOR	MT 621 004	2/15/2011	707		SC			2/18/2011		S/D	2/18/2011	
27-PYRID	03216.03	90000542	CONNECTOR	MT 621 004	2/15/2011	707		SC	RSC	3/8/2011	3/11/2011	2	RPD	3/11/2011	
27-PYRID	03225.01	90000540	SCONN	MT 621 004	2/15/2011	595		SC	TSC	2/18/2011	2/18/2011	534	OPN	2/18/2011	
27-PYRID	03225.01	90000540	SCONN	MT 621 004	2/15/2011	595		SC			2/23/2011		S/D	2/23/2011	
27-PYRID	03225.01	90000540	SCONN	MT 621 004	2/15/2011	595		SC	RSC	3/8/2011	3/11/2011	2	RPD	3/11/2011	
27-PYRID	03247.01	RPDB4W/O	CONNECTOR	AS 621 027	9/16/2010	459		FLG	CL	9/16/2010	9/16/2010	120	RPD	9/16/2010	
27-PYRID	03515.11	90000265	SCONN	TT 610 007C	9/28/2010	1014		SC	TSC	9/30/2010	10/1/2010	514	OPN	10/1/2010	
27-PYRID	03515.11	90000265	SCONN	TT 610 007C	9/28/2010	1014		SC	TSC	10/3/2010	10/4/2010	5	RPD	10/4/2010	

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	Comments
27-PYRID	03584.05	90000724	CONNECTOR	PP 308B	5/3/2011	563		U	TU	5/5/2011	5/5/2011	25	RPD	5/5/2011	
27-PYRID	03584.08	90000548	CONNECTOR	PP 308B	2/22/2011	559		CAP	TCAP	2/23/2011	2/24/2011	3503	OPN	2/24/2011	
27-PYRID	03584.08	90000548	CONNECTOR	PP 308B	2/22/2011	559		CAP			3/8/2011		S/D	3/8/2011	
27-PYRID	03584.08	90000548	CONNECTOR	PP 308B	2/22/2011	559		CAP	RC	5/4/2011	5/5/2011	51	RPD	5/5/2011	
27-PYRID	03598.09	90000463	SCONN	PP 308B	12/16/2010	288		PLG	RPLG	12/20/2010	12/21/2010	2	RPD	12/21/2010	
27-PYRID	03600.01	90000200	CONNECTOR	PP 308B	8/18/2010	4328		SC	WO	8/19/2010	8/20/2010	4927	OPN	8/20/2010	
27-PYRID	03600.01	90000200	CONNECTOR	PP 308B	8/18/2010	4328		SC	RCON	9/1/2010	9/1/2010	5	RPD	9/1/2010	
27-PYRID	03600.02	90000200	CONNECTOR	PP 308B	8/18/2010	614		SC	WO	8/19/2010	8/20/2010	663	OPN	8/20/2010	
27-PYRID	03600.02	90000200	CONNECTOR	PP 308B	8/18/2010	614		SC	RCON	9/1/2010	9/1/2010	4	RPD	9/1/2010	
27-PYRID	03602.01	90000727	CONNECTOR	PP 308B	5/4/2011	875		SC	TSC	5/6/2011	5/6/2011	770	OPN	5/6/2011	
27-PYRID	03602.01	90000727	CONNECTOR	PP 308B	5/4/2011	875		SC	RF	5/16/2011	5/17/2011	1	RPD	5/17/2011	
27-PYRID	03603.07	90000728	SCONN	PP 308B	5/4/2011	1327		U	TU	5/6/2011	5/6/2011	516	OPN	5/6/2011	
27-PYRID	03603.07	90000728	SCONN	PP 308B	5/4/2011	1327		U	RF	5/16/2011	5/17/2011	1	RPD	5/17/2011	
27-PYRID	03715.01	90000220	SCONN	TT 303	8/19/2010	559		PLG	RPLG	8/24/2010	8/25/2010	5	RPD	8/25/2010	
27-PYRID	03715.01	90000730	SCONN	TT 303	5/4/2011	2496		PLG	TPLG	5/6/2011	5/6/2011	2422	OPN	5/6/2011	
27-PYRID	03715.01	90000730	SCONN	TT 303	5/4/2011	2496		PLG	RV	5/16/2011	5/17/2011	2	RPD	5/17/2011	
27-PYRID	03721.01	90000547	CONNECTOR	TT 303	2/22/2011	571		FLG	TFLG	2/23/2011	2/24/2011	1434	OPN	2/24/2011	
27-PYRID	03721.01	90000547	CONNECTOR	TT 303	2/22/2011	571		FLG			3/8/2011		S/D	3/8/2011	
27-PYRID	03721.01	90000547	CONNECTOR	TT 303	2/22/2011	571		FLG	RG	5/16/2011	5/17/2011	2	RPD	5/17/2011	
27-PYRID	03726.04	90000731	SCONN	TT 302	5/4/2011	518		SC	TCON	5/6/2011	5/6/2011	801	OPN	5/6/2011	
27-PYRID	03726.04	90000731	SCONN	TT 302	5/4/2011	518		SC	RF	5/16/2011	5/17/2011	3	RPD	5/17/2011	
27-PYRID	03796.05	90000742	CONNECTOR	PP 604A	5/5/2011	2960		CAP	RC	5/9/2011	5/9/2011	3	RPD	5/9/2011	
27-PYRID	03797.01	90000743	CONNECTOR	PP 604A	5/5/2011	641		GAU	RF	5/9/2011	5/9/2011	3	RPD	5/9/2011	
27-PYRID	03834.02	90000744	SCONN	MT 603	5/5/2011	977		SC	TFIT	5/9/2011	5/9/2011	3	RPD	5/9/2011	
27-PYRID	03846.01	90000745	SCONN	MT 604	5/5/2011	875		PLG	RPLG	5/9/2011	5/9/2011	3	RPD	5/9/2011	
27-PYRID	03853.01	90000222	SCONN	MT 607	8/19/2010	768		SC	WO	8/23/2010	8/23/2010	522	OPN	8/23/2010	
27-PYRID	03853.01	90000222	SCONN	MT 607	8/19/2010	768		SC	TSC	8/25/2010	8/31/2010	3	RPD	8/31/2010	
27-PYRID	03907.02		SCONN	PP-620.163	3/29/2011	826		SC	TSC	3/29/2011	3/29/2011	2	RPD	3/29/2011	
27-PYRID	04051.06	90000340	SCONN	TK-256	10/8/2010	10800		U	IC	10/10/2010	10/11/2010	6	RPD	10/11/2010	
27-PYRID	04051.19	90000341	CONNECTOR	TK-256	10/8/2010	10200		FLG	IC	10/10/2010	10/11/2010	5	RPD	10/11/2010	
27-PYRID	04055.03	90000342	CONNECTOR	TK-256	10/8/2010	10500		FLG	IC	10/10/2010	10/11/2010	11	RPD	10/11/2010	
41-CYANO	0113A.02	90000821	SCONN	AS-2	6/6/2011	510		SC	TSC	6/7/2011	6/8/2011	4477	OPN	6/8/2011	
41-CYANO	0113A.02	90000821	SCONN	AS-2	6/6/2011	510		SC	RV	6/16/2011	6/17/2011	13	RPD	6/17/2011	
41-CYANO	0241A.06	90000436	SCONN	PP-034A	12/15/2010	540		PLG	TPLG	12/17/2010	12/17/2010	9	RPD	12/17/2010	
27-PYRID	02610G.03	90000207	SCONN	TK254	9/10/2010	604		SC	TSC	9/14/2010	9/14/2010	28700	OPN	9/14/2010	
27-PYRID	02610G.03	90000207	SCONN	TK254	9/10/2010	604		SC	RU	9/25/2010	9/25/2010	2	RPD	9/25/2010	
27-PYRID	02611A.05	90000208	SCONN	TK254	9/10/2010	11100		SC	TSC	9/14/2010	9/14/2010	10300	OPN	9/14/2010	
27-PYRID	02611A.05	90000208	SCONN	TK254	9/10/2010	11100		SC	RSC	9/25/2010	9/25/2010	2	RPD	9/25/2010	
27-PYRID	02614B.03	90000595	SCONN	MT620.251	3/23/2011	624		SC	RSC	3/27/2011	3/28/2011	2	RPD	3/28/2011	

PUMPS

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	Comments
41-CYANO	00051	90000581	PUMP	PP-213B	3/14/2011		VSBL	PS	RS	3/17/2011	3/18/2011	2	RPD	3/18/2011	
41-CYANO	00060	90000145	PUMP	PP-213C	7/30/2010		VSBL	PS	RS	7/31/2010	8/3/2010	11	RPD	8/3/2010	
41-CYANO	00060	90000401	PUMP	PP-213C	2/25/2011		VSBL	PS	RS	2/26/2011	2/28/2011	4	RPD	2/28/2011	
41-CYANO	00069	90000243	PUMP	PP-211A	9/9/2010	1133	VSBL	PS	RS	9/12/2010	9/13/2010	5	RPD	9/13/2010	
41-CYANO	00069	90000406	PUMP	PP-211A	1/5/2011	2390		PS	RS	1/6/2011	1/7/2011	83	RPD	1/7/2011	
41-CYANO	00069	90000471	PUMP	PP-211A	1/24/2011	123000	VSBL	PS	RS	1/25/2011	1/25/2011	5	RPD	1/25/2011	
41-CYANO	00069	90000550	PUMP	PP-211A	2/22/2011	94900		PS	RS	2/24/2011	2/25/2011	7	RPD	2/25/2011	

Area	Tag #	WO #	Class	Equip	Monitor Date	Monitor Reading	VSBL Code	Part Leaking	Repair Method	Repair Date	Remonitor Date	Remonitor Reading	Status	Status Date	Comments
41-CYANO	00069	90000782	PUMP	PP-211A	5/23/2011	3423		PS	RPS	5/27/2011	5/27/2011	26	RPD	5/27/2011	
41-CYANO	00164	90000360	PUMP	PP-006D	10/17/2010		VSBL	PS	RS	10/18/2010	10/23/2010	7	RPD	10/23/2010	
41-CYANO	00164		PUMP	PP-006D	1/23/2011		VSBL	PS	RS	1/24/2011	1/24/2011	6	RPD	1/24/2011	
41-CYANO	00164		PUMP	PP-006D	3/4/2011		VSBL	PS	RS	3/4/2011	3/5/2011	7	RPD	3/5/2011	
41-CYANO	00171	90000361	PUMP	PP-006C	10/17/2010		VSBL	PS	RS	10/18/2010	10/23/2010	97	RPD	10/23/2010	
41-CYANO	00171	90000560	PUMP	PP-006C	3/3/2011		VSBL	PS	RS	3/3/2011	3/4/2011	10	RPD	3/4/2011	
41-CYANO	00171	90000645	PUMP	PP-006C	4/12/2011		VSBL	TC	RT	4/12/2011	4/12/2011	4	RPD	4/12/2011	
41-CYANO	00171	10094000	PUMP	PP-006C	4/25/2011	5	VSBL	PS	RPS	4/26/2011	4/27/2011	1	RPD	4/27/2011	
41-CYANO	00205	90000763	PUMP	PP-010B	5/27/2011		VSBL	PS	RPS	5/31/2011	5/31/2011	6	RPD	5/31/2011	
41-CYANO	00213	90000121	PUMP	PP-010A	7/12/2010		VSBL	PS	RS	7/16/2010	7/16/2010	7	RPD	7/16/2010	
41-CYANO	00213	90000320	PUMP	PP-010A	10/6/2010	4851		PLG	TPLG	10/7/2010	10/8/2010	41	OPN	10/8/2010	
41-CYANO	00213	90000320	PUMP	PP-010A	10/6/2010	4851		PLG	RPLG	10/14/2010	10/15/2010	4	RPD	10/15/2010	
27-PYRID	02091	90000144	PUMP	PP-768	7/29/2010		VSBL	PS	RS	7/29/2010	8/3/2010	11	RPD	8/3/2010	
27-PYRID	02107	90000143	PUMP	PP-770	7/29/2010		VSBL	PS	RS	7/29/2010	8/3/2010	11	RPD	8/3/2010	
27-PYRID	02244	90000400	PUMP	TK 202	12/3/2010		VSBL	PS	ADS	12/7/2010	12/8/2010	110	RPD	12/8/2010	
27-PYRID	02244	90000760	PUMP	TK 202	5/6/2011		VSBL	PS			5/10/2011		S/D	5/10/2011	
27-PYRID	02244	90000760	PUMP	TK 202	5/6/2011		VSBL	PS	RPS	5/16/2011	5/17/2011	2	RPD	5/17/2011	
27-PYRID	02269	90000566	PUMP	TK 200	3/14/2011		VSBL	PS	ERHS	3/16/2011	3/16/2011		OPN	3/16/2011	
27-PYRID	02269	90000566	PUMP	TK 200	3/14/2011		VSBL	PS	RS	3/26/2011	3/28/2011	2	RPD	3/28/2011	
27-PYRID	02269	90000780	PUMP	TK 200	5/17/2011		VSBL	PS	ERHS	5/18/2011	5/18/2011		OPN	5/18/2011	
27-PYRID	02269	90000780	PUMP	TK 200	5/17/2011		VSBL	PS			6/1/2011		OHS	6/1/2011	
27-PYRID	02269	90000780	PUMP	TK 200	5/17/2011		VSBL	PS	RPS	6/3/2011	6/13/2011	2	RPD	6/13/2011	
27-PYRID	02313	90000567	PUMP	PP 230A/B	3/14/2011		VSBL	PS	RS	3/16/2011	3/16/2011	3	RPD	3/16/2011	
27-PYRID	02617	90000182	PUMP	pp622.242	8/16/2010	822		PS	RS	8/18/2010	8/18/2010	4	RPD	8/18/2010	
27-PYRID	02617	90000405	PUMP	pp622.242	1/5/2011	1148		PS	RS	1/10/2011	1/10/2011	18	RPD	1/10/2011	
27-PYRID	02625	90000124	PUMP	pp622.242	7/17/2010		VSBL	PS	RS	7/21/2010	7/23/2010	4	RPD	7/23/2010	
27-PYRID	02625	90000568	PUMP	pp622.242	3/30/2011	652		PS	RPS	4/4/2011	4/5/2011	2	RPD	4/5/2011	
27-PYRID	02625	90000666	PUMP	pp622.242	4/25/2011	585		PS	ADS	4/27/2011	4/27/2011	10	RPD	4/27/2011	
27-PYRID	02641	90000569	PUMP	pp622.256a	3/30/2011	749		PS	RPS	4/3/2011	4/4/2011	3	RPD	4/4/2011	
27-PYRID	02647	90000423	PUMP	pp622.256b	12/14/2010	12600		PS	RS	12/16/2010	12/17/2010	5	RPD	12/17/2010	
27-PYRID	02647	90000667	PUMP	pp622.256b	4/25/2011	705		PS	ADS	4/27/2011	4/27/2011	632	OPN	4/27/2011	
27-PYRID	02647	90000667	PUMP	pp622.256b	4/25/2011	705		PS			5/10/2011		S/D	5/10/2011	
27-PYRID	02647	90000667	PUMP	pp622.256b	4/25/2011	705		PS	RPS	5/11/2011	5/11/2011	9	RPD	5/11/2011	
27-PYRID	02916	90000242	PUMP	PP621.140B	9/9/2010	645	VSBL	PS	ERHS	9/12/2010	9/13/2010	84	OPN	9/13/2010	
27-PYRID	02916	90000242	PUMP	PP621.140B	9/9/2010	645	VSBL	PS			9/14/2010		S/D	9/14/2010	
27-PYRID	02916	90000242	PUMP	PP621.140B	9/9/2010	645	VSBL	PS	RS	9/30/2010	10/15/2010	24	RPD	10/15/2010	
27-PYRID	02929	90000180	PUMP	PP621.140A	8/15/2010		VSBL	PS	RS	8/18/2010	8/18/2010	2	RPD	8/18/2010	
27-PYRID	03580	90000420	PUMP	PP 308B	12/7/2010		VSBL	PS	RS	12/8/2010	12/8/2010	8	RPD	12/8/2010	
27-PYRID	03794	90000546	PUMP	PP 604A	2/21/2011		VSBL	PS	RS	2/24/2011	2/25/2011	155	RPD	2/25/2011	
27-PYRID	03909	90000669	PUMP	PP-620.163	4/25/2011	960		PS	RPS	4/27/2011	4/28/2011	2	RPD	4/28/2011	
41-CYANO	03926	90000784	PUMP	PP-600.002	5/25/2011	1508		PS	RPS	5/27/2011	5/27/2011	2	RPD	5/27/2011	
27-PYRID	03965	90000422	PUMP	PP-621.093	12/14/2010	1444		PS	RS	12/16/2010	12/16/2010	2006	OPN	12/16/2010	
27-PYRID	03965	90000422	PUMP	PP-621.093	12/14/2010	1444		PS	RS	12/18/2010	12/21/2010	9	RPD	12/21/2010	
27-PYRID	03965	90000668	PUMP	PP-621.093	4/25/2011	3195		PS	RPS	4/27/2011	4/27/2011	6	RPD	4/27/2011	
27-PYRID	03989	90000380	PUMP	PP-620.163	11/11/2010		VSBL	PLG	TPLG	11/15/2010	11/15/2010	4	RPD	11/15/2010	

Agitators

27-PYRID	03852		AGITATOR	MT 607	9/17/2010		VSBL	AS	VI	9/20/2010	9/20/2010	0	RPD	9/20/2010	
27-PYRID	03852		AGITATOR	MT 607	9/28/2010		VSBL	AS	OT	10/3/2010	10/6/2010	230	RPD	10/6/2010	
27-PYRID	03852	90000381	AGITATOR	MT 607	11/11/2010		VSBL	AS	TP	11/15/2010	11/15/2010	42	RPD	11/15/2010	

APPENDIX C

THIRD-PARTY LEAK DETECTION AND REPAIR AUDIT REPORT

Third-Party Leak Detection and Repair Audit

Vertellus Agriculture & Nutrition Specialties LLC

PROJECT #: JL0402.250

PREPARED FOR:
Vertellus Agriculture & Nutrition Specialties LLC
1500 S. Tibbs Avenue
Indianapolis, Indiana 46241-0076

PREPARED BY:
August Mack Environmental, Inc.
1302 North Meridian Street, Suite 300
Indianapolis, Indiana 46202

ISSUE DATE:
June 28, 2011

August Mack
ENVIRONMENTAL

THIRD-PARTY LEAK DETECTION
AND REPAIR AUDIT
VERTELLUS AGRICULTURE & NUTRITION
SPECIALTIES LLC
INDIANAPOLIS, INDIANA
AUGUST MACK PROJECT NUMBER JL0402.250

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LEAK DETECTION AND REPAIR AUDIT
VERTELLUS AGRICULTURE & NUTRITION
SPECIALTIES LLC
INDIANAPOLIS, INDIANA
AUGUST MACK PROJECT NUMBER JL0402.250

INTRODUCTION

August Mack Environmental, Inc. (August Mack) has completed the 2011 third-party Leak Detection and Repair (LDAR) audit at the Vertellus Agriculture & Nutrition Specialties LLC (Vertellus) facility located in Indianapolis, Indiana. The LDAR audit was performed to comply with the requirements set forth in the Consent Decree (CD) with the United States Environmental Protection Agency (USEPA), Civil Action No. 1:09-cv-1030 SEB-TAB as lodged on August 21, 2009 and effective December 1, 2009. The third-party LDAR Audit Commencement Date was April 25, 2011. Audit activities were completed with the issuance of this report on June 28, 2011. The audit covers the period of time from April 1, 2010 to March 31, 2011.

As required by Section K of the CD, Vertellus must retain a third-party to conduct an LDAR audit once every twelve months. Each LDAR audit shall include:

- A review of compliance with all applicable LDAR requirements;
- A review of whether any pieces of equipment are not included in the LDAR program that are required to be included;
- Verification that equipment was monitored at the appropriate frequency;
- Verification that proper documentation and sign-offs have been recorded for equipment placed on the Delay of Repair (DOR) list;
- Confirm that all repairs have been completed within the required periods;
- A review of monitoring data and equipment counts for feasibility and unusual trends;

- Verification that proper calibration records and monitoring instrument maintenance information are maintained;
- Verification that other LDAR program records are maintained as required; and,
- Comparative monitoring and calculation of comparative monitoring percentages and ratios.

The comparative monitoring portions of the 2011 audit apply to Covered Equipment in Plant 41, as required by the CD. Comparative monitoring of Covered Equipment in Plant 27 was performed in the 2010 third-party audit. The LDAR regulations review applies to the facility-wide LDAR program and the remaining portions of the CD apply to the Covered Process Units (Plant 27 and Plant 41). In addition to Plant 27 and Plant 41, the Vertellus LDAR program also consists of the Utilities Plant (Plant 29), the Vinylpyridine (VP) Plant (Plant 40), the Wheeler Plant/Spec Chem (Plant 47) and Amino Pyridine (AP) Plant (Plant 48).

LDAR REGULATIONS REVIEW

The various process units (plants) at the Vertellus facility are subject to multiple LDAR regulations. As required by the CD, monitoring frequencies specified by the CD come into force no later than nine months after the Date of Lodging and thus are effective starting in May 2010. Table 1 identifies each of the plants to which LDAR regulations apply and lists the applicable LDAR requirements.

TABLE 1
Process Unit LDAR Applicability

Process Unit	Applicable LDAR Requirements
Plant 27	40 CFR Part 63, Subpart H (HON); Consent Decree
Plant 29	40 CFR Part 264/265, Subpart BB
Plant 40	40 CFR Part 61, Subpart J; 40 CFR Part 265, Subpart BB
Plant 41	40 CFR Part 63, Subpart GGG (Pharma); Consent Decree
Plant 47	40 CFR Part 265, Subpart BB
Plant 48	40 CFR Part 265, Subpart BB

Vertellus has incorporated into the facility-wide LDAR program the requirements of the various applicable LDAR regulations. By incorporating the Enhanced LDAR requirements of the CD as well as the requirements of HON; Pharma; 40 CFR Part 61, Subpart J; and 40 CFR Part 264/265, Subpart BB into the facility-wide LDAR program, Vertellus ensures compliance with all applicable LDAR regulations. A review of the LDAR regulations listed in Table 1 as compared to the facility-wide program was completed. August Mack confirmed that Vertellus has identified the most stringent requirements that apply to each process unit and equipment type. The Vertellus LDAR database has been populated with the regulatory leak definitions and the periodic monitoring frequency for each equipment type subject to LDAR regulations.

QA/QC REQUIREMENTS REVIEW

In accordance with the CD, August Mack reviewed compliance with Quality Assurance and Quality Control (QA/QC) requirements as described in Subparagraphs 41.a through 41.g. Each item was reviewed as described below. Subparagraph 41.h is not required to be reviewed as part of the third-party audit.

Inclusion in LDAR Program

As required by CD Subparagraph 41.a, August Mack reviewed whether any pieces of equipment that are required to be in the LDAR program are not included in the LDAR program. This review was performed at the time of the comparative monitoring. There were areas encountered during the comparative monitoring where new components had replaced old components, but had not yet been integrated into the LDAR database. The most notable examples of this were in the tank farm in the vicinity of Tanks 23, 600.12, and 600.23. Derek Akers, the Emission Monitoring Service, Inc. (EMSI) LDAR technician onsite, confirmed that certain components needed to be updated in the database and that he was waiting on copies of the Management of Change (MOC) documentation to complete those updates.

Monitoring Frequency

As required by CD Subparagraph 41.b, August Mack verified that equipment was monitored at the appropriate frequency. The monitoring records in the LDAR database were provided by EMSI monitoring technician Joe McHugh. A randomly selected sample of database entries for each equipment type in Plant 27 and Plant 41 was reviewed for time period covered by the audit. The equipment types reviewed included pumps, agitators, valves, connectors, and open-ended lines at the closure device (OELCDs).

In accordance with CD Subparagraph 15.c, pumps in Plant 27 and Plant 41 are required to be monitored monthly. Based on the sample of database records for four pumps in Plant 41, pumps are being monitored at the required monthly interval.

In accordance with CD Subparagraph 15.c, agitators in Plant 27 and Plant 41 are required to be monitored monthly. Based on the sample of database records for one agitator, agitators are being monitored at the required monthly interval.

In accordance with CD Subparagraph 15.a, valves in Plant 27 and Plant 41 are required to be monitored quarterly. Based on the sample of database records for eight valves in Plant 41, valves are being monitored at the required quarterly interval.

In accordance with CD Subparagraph 15.b, connectors in Plant 27 and Plant 41 are required to be monitored semi-annually. Based on the sample of database records for twelve connectors in Plant 41, connectors are being monitored at the required semi-annual interval.

In accordance with CD Subparagraph 15.d, OELCDs in Plant 27 and Plant 41 are required to be monitored quarterly. Based on the sample of database records for four OELCDs, OELCDs are being monitored at the required quarterly interval. Although OELCDs are currently categorized as "connectors" in the LDAR database, it was confirmed that they are all designated as having a quarterly monitoring frequency.

Delay of Repair

As required by CD Subparagraph 41.c, August Mack verified that proper documentation and sign-offs have been recorded for all equipment placed on the DOR list. Required sign-off documentation from the relevant process unit supervisor (or person of similar authority) indicating that the piece of Covered Equipment is technically infeasible to repair without a process unit shutdown was reviewed for validity. Repair records were reviewed to ensure repair (or replacement, repacking, improvement, or elimination, as described in the CD) has been completed on the Covered Equipment by the end of the next process shutdown.

Repair Timeframes

As required by CD Subparagraph 41.d, August Mack verified that repairs have been performed in the required periods. Vertellus utilizes an LDAR database that includes an indicator on the main menu that identifies the number of open leaks, the number of units for which repairs are overdue, the number of units for which repairs are due on the current day, the number of units for which repairs are due the following day, and the number of units for which repairs are due within two to three days. All repair records for the entire year for equipment in Plant 27 and Plant 41 were reviewed to ensure that the proper repair timeframes were followed.

LDAR regulations and the CD require that the first attempt at repair must be performed no later than 5 days after the leak has been detected. Adherence to this requirement was verified through a review of the repair records in the LDAR database. For each entry reviewed, the first attempt at repair was documented as being performed within five days of the leak being detected.

The final attempt at repair must be performed within 15 days after the leak has been detected or the equipment may be placed on the DOR list. Adherence to this requirement was verified through a review of the repair records in the LDAR database. For each entry reviewed, the final attempt at repair was completed or the piece of equipment was placed on the DOR list within 15 days of the leak being detected.

Monitoring Feasibility and Unusual Trends

As required by CD Subparagraph 41.e, August Mack reviewed monitoring data and equipment counts for feasibility and unusual trends. Detailed monitoring reports were reviewed for eleven randomly selected days from April 1, 2010 to March 31, 2011. The monitoring reports provided counts of the number of components monitored on each of the monitoring dates. The maximum number of components monitored in a day was 787 on May 18, 2010. Assuming an eight hour workday, this equates to approximately 37 seconds per monitoring point. Since the time spent on most pieces of equipment is typically less than 30 seconds, this count is considered feasible. The audit team did not identify any unusual trends in the monitoring.

Calibration Records and Instrument Maintenance

As required by CD Subparagraph 41.f, August Mack verified that proper calibration records and monitoring instrument maintenance information is maintained. Calibration records were reviewed for monitoring performed by EMSI between April 1, 2010 and March 31 of 2011. A review of the records indicates that the monitoring equipment was calibrated each day prior to initiating monitoring for that day. Calibration records are maintained on file by EMSI at the Vertellus facility. Monitoring instrument maintenance information was not available for review during the audit.

As part of the calibration log review, August Mack verified that the individual calibration logs completed by EMSI for monitoring performed at Vertellus contained all required information. All reviewed calibration logs included the daily certification statement required by Paragraph 40 of the CD and were signed by the monitoring technician. In addition, calibration drift assessment records were reviewed at the facility. In each case the calibration drift assessment indicated a drift of less than 10%, which is considered acceptable.

Additional LDAR Program Records

As required by CD Subparagraph 41.g, August Mack verified that other LDAR program records are maintained as required. Documentation of the required quarterly QA/QC audits performed by Vertellus was reviewed as part of the third-party audit.

COMPARATIVE MONITORING

Comparative Monitoring of Covered Equipment to satisfy the requirement of the Vertellus CD, Paragraph 44, was performed by August Mack at Vertellus Plant 41 on Tuesday, May 24 and Wednesday, May 25. Field activities, including equipment calibration, monitoring and documentation, were performed by August Mack. A summary of field activities is included as Appendix A. Comparative monitoring equipment calibration logs are included as Appendix B.

A total of 393 pieces of Covered Equipment in Plant 41 were monitored during the two day comparative monitoring period. The equipment monitored consisted of 12 pumps, 58 valves, 1 agitator, 287 connectors, and 35 OELCDs. This represents approximately 100% of pumps, 15% of valves, 100% of agitators, 15% of connectors, and 21% of OELCDs in Plant 41. Comparative Monitoring leak percentages determined by August Mack during the 2011 audit are provided in Table 2. Comparative monitoring data is included as Appendix C.

TABLE 2
Plant 41 Comparative Monitoring

Equipment Type	Number Monitored	Number Leaking	Comparative Monitoring Audit Leak Percentage	Leak Definition
Valve	58	0	0.00%	250 ppm
Pump	12	2	16.67%	500 ppm
Agitator	1	0	0.00%	500 ppm
Connector	287	3	1.05%	250 ppm
OELCD	35	0	0.00%	250 ppm

For the Covered Process Unit audited during the 2011 third-party LDAR audit (Plant 41) the historic, average leak percentage from prior monitoring events was calculated for each equipment type. This calculation is based on monitoring performed by Vertellus during the regular periodic monitoring immediately preceding the comparative monitoring. The average number monitored and average number leaking is based on the preceding four (4) periods for valves, twelve (12) periods for pumps, twelve (12) periods for agitators, two (2) periods for connectors, and four (4) periods for OELCDs. Historic periodic monitoring leak percentages determined by Vertellus are provided in Table 3 below.

TABLE 3
Plant 41 Historic Periodic Monitoring

Equipment Type	Average Number Monitored	Average Number Leaking	Historic Average Leak Percentage
Valve	384	3.5	0.91%
Pump	12	1.5	12.59%
Agitator	1	0	0.0%
Connector	1,122	4.5	0.40%
OELCD	165	1.75	1.06%

For each Covered Equipment Type in each Covered Process Unit, the Comparative Monitoring Leak Ratio was calculated. The Comparative Monitoring Leak Ratio is the ratio of the comparative monitoring leak percentage shown in Table 2 to the historic periodic monitoring leak percentage shown in Table 3 for each Covered Equipment Type. The Comparative Monitoring Leak Ratio for each equipment type in Plant 41 is provided in Table 4 below.

TABLE 4
Plant 41 Comparative Monitoring Leak Ratio

Equipment Type	Comparative Monitoring Audit Leak Percentage	Historic Average Leak Percentage	Comparative Monitoring Leak Ratio
Valve	0.00%	0.91%	0.00
Pump	16.67%	12.59%	1.32
Agitator	0.0%	0.0%	0.0
Connector	1.05%	0.40%	2.63
OELCD	0.00%	1.06%	0.00

In accordance with Consent Decree Subparagraph 46.a "Requirements of a CAP", Vertellus is required to include in the preliminary Corrective Action Plan (CAP) all of the actions that have been taken or will be taken to address the systemic causes of a Comparative Monitoring Leak Ratio of 3.0 or higher. Based on the Comparative Monitoring Leak Ratios presented in Table 4, no equipment types were found to have a ratio of 3.0 or higher.

SUMMARY OF AUDIT RESULTS

August Mack completed the on-site portion of the third-party LDAR audit of the Vertellus facility on May 25, 2011. With all audit activities being completed June 28, 2011, prior to the LDAR Audit Completion Date, which is defined in the CD, Subparagraph 9.s, as 120 days after the LDAR Audit Commencement Date. A summary of the LDAR audit results is provided below.

- **LDAR Regulations Review:** No issues were identified with respect to application of LDAR regulations in general. All pieces of equipment are classified under the proper regulatory requirements.
- **QA/QC Requirements Review:**
  - There were areas encountered during the comparative monitoring where new components had replaced old components, but had not yet been integrated into the LDAR database. August Mack confirmed with Vertellus that these pieces of equipment were new and were awaiting management of change (MOC) documentation.
  - No issues were identified with respect to monitoring frequency of the various equipment types.
  - The DOR process in place at Vertellus appears to be in compliance with CD and other LDAR requirements.
  - No issues were identified with respect to repair timeframes at the Vertellus facility. The facility appears to be in compliance with CD and other LDAR requirements.
  - No issues were identified with respect to monitoring feasibility or unusual trends in monitoring or monitoring results.
  - No issues were identified with respect to calibration records for monitoring equipment used by Vertellus or contractor personnel. Instrument maintenance records were not available for review and should be maintained on file by Vertellus.
  - No issues were identified with respect to other LDAR program records.
- **Comparative Monitoring:**
  - Comparative monitoring resulted in lower leak percentages for valves and OELCDs then the historic monitoring performed by Vertellus.
  - Pumps were identified as having a higher leak percentage than the historic monitoring indicated. Due to the small number of pumps in Plant 41, the leak percentage is greatly influenced by each leak identified. The resulting

Comparative Monitoring Leak Ratio was 1.32; however, since the Comparative Monitoring Leak Ratio is less than 3.0, inclusion of specific corrective actions with respect to pumps is not required in the CAP.

- Connectors were identified as having a higher leak percentage than the historic monitoring indicated. The resulting Comparative Monitoring Leak ratio was 2.63. Since the Comparative Monitoring Leak Ratio for less than 3.0, Vertellus is not required to include details of corrective actions in the CAP to be developed. Vertellus currently has in place an active program to replace and upgrade connectors that are part of the facility LDAR program.

APPENDIX A

Summary of Field Activities

Equipment monitoring for the Comparative Monitoring requirement of the Vertellus Consent Decree was performed by August Mack at Vertellus Plant 41 on Tuesday, May 24 and Wednesday, May 25. Field activities, including equipment calibration, monitoring and documentation, were performed by August Mack.

Monitoring Equipment

A Thermo Scientific TVA-1000B (FID) was used for the onsite monitoring. The FID was calibrated using zero-air and methane-in-air span gases at 100 ppm, 500 ppm and 10,000 ppm concentrations. Daily calibration of the FID was performed prior to comparative monitoring activities using the zero-air and the three span gases. Calibration was recorded on the calibration log by field personnel. A calibration drift check was performed on the afternoon of May 24th to ensure the proper calibration was maintained. An afternoon drift check was not performed on May 25th since monitoring was completed in the early afternoon.

Monitoring Methodology

Prior to initiating monitoring in an area of Plant 41, monitoring personnel recorded background VOC concentrations at least six (6) feet away from the equipment to be monitored for leaks. Background concentrations of VOCs were approximately 3.0 – 5.0 ppm in the process areas. In cases where the background concentration was within the drift of the TVA-1000B when moving between pieces of equipment to be monitored, the background was assumed to be unchanged from the previous documented background concentration. All monitoring techniques were consistent with EPA Method 21.

APPENDIX B

Comparative Monitoring Calibration Logs

August Mack

ENVIRONMENTAL

Daily Analyzer Calibration Form:

Analyzer Model: TVA 1000 B **Analyzer Serial No.:** 522812846

Leak Definition / Calibration Certified Gases:

Zero Air Cylinder No.: 100510KG Gas Type (Methane, etc.): METHANE

Cylinder No.: 930528 PPMV Concentration: 100 Exp. Date: 5/30/13

Cylinder No.: ~~[illegible]~~ 88002021[illegible] PPMV Concentration: 484 Exp. Date: 3/12/13

Cylinder No.: CC11253 PPMV Concentration: 9813 Exp. Date: 3/12/13

Clean or replace all filters daily.

Daily Calibration Information Section

	5/24	Calibration Gas Results (ppmv)						
	Time	**Zero**	**100**	**500/ND**	**1,000**	**2,000**	**10,000**	**Dilution ***
Morning	8:08	0.54	100	492	—	—	9890	
Afternoon	2:01	0.52	96	485	—	—	9420	
Evening								

Note: Dilution * If a dilution probe will be used, it will need to be calibrated as well as documentation on the response time test performed during your quarterly certification.

Note: Drift When checking calibration throughout the day, if a calibration value drifts by 10% or more, the analyzer needs to be recalibrated.

Note: Method 21 Only one calibration is required per Method 21. It is recommended that a minimum of a morning and noon calibration check is performed.

If maintenance or a modification to sample pumping system or flow configuration is made that would change the response time, a new response time test (See Quarterly Certification Sheet) is required.

Per Method 21 a response factor needs to be determined for each compound of interest by either testing or by reference sources. The established response factor shall be ≤ 10. If response factor is ≥ 10, calibrate with the compound of interest or select an analyzer with a response factor ≤ 10.

Calibrator Signature: [signature] **Date:** 5/24/11

August Mack
ENVIRONMENTAL

5/25/11

Daily Analyzer Calibration Form:

Analyzer Model: TVA 1000B **Analyzer Serial No.:** 522812846

Leak Definition / Calibration Certified Gases:

Zero Air Cylinder No.: 100510KT Gas Type (Methane, etc.): METHANE

Cylinder No.: 930528 PPMV Concentration: 100 Exp. Date: 5/30/13

Cylinder No.: EB0020219 PPMV Concentration: 484 Exp. Date: 3/12/13

Cylinder No.: CC11253 PPMV Concentration: 9813 Exp. Date: 12/1/11

Clean or replace all filters daily.

Daily Calibration Information Section

	5/25	Calibration Gas Results (ppmv)						
	Time	Zero	100	500/ND	1,000	2,000	10,000	Dilution *
Morning	8:46	0.15	96.5	487	—	—	9548	
Afternoon								
Evening								

Note: Dilution * If a dilution probe will be used, it will need to be calibrated as well as documentation on the response time test performed during your quarterly certification.

Note: Drift When checking calibration throughout the day, if a calibration value drifts by 10% or more, the analyzer needs to be recalibrated.

Note: Method 21 Only one calibration is required per Method 21. It is recommended that a minimum of a morning and noon calibration check is performed.

If maintenance or a modification to sample pumping system or flow configuration is made that would change the response time, a new response time test (See Quarterly Certification Sheet) is required.

Per Method 21 a response factor needs to be determined for each compound of interest by either testing or by reference sources. The established response factor shall be ≤ 10. If response factor is ≥ 10, calibrate with the compound of interest or select an analyzer with a response factor ≤ 10.

Calibrator Signature: [signature] **Date:** 5/25/11

APPENDIX C

Comparative Monitoring Data

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00001.02	FLG	3 - 5
41-CYANO	01	00001.03	FLG	3 - 5
41-CYANO	01	00002.05	UN	3 - 5
41-CYANO	01	00002.06	PLG	3 - 5
41-CYANO	01	00005	FLG	3 - 5
41-CYANO	01	00005.01	SC	3 - 5
41-CYANO	01	00006.02	FLG	3 - 5
41-CYANO	01	00007.01	PLG	3 - 5
41-CYANO	01	00007.02	SC	3 - 5
41-CYANO	01	00008.02	FLG	3 - 5
41-CYANO	01	00012.02	FLG	3 - 5
41-CYANO	01	00013.02	FLG	3 - 5
41-CYANO	01	00013.03	FLG	3 - 5
41-CYANO	01	00014.02	FLG	3 - 5
41-CYANO	01	00016.04	SC	3 - 5
41-CYANO	01	00016.07	SC	3 - 5
41-CYANO	01	00021.02	FLG	3 - 5
41-CYANO	01	00023.03	FLG	3 - 5
41-CYANO	01	00024.03	PLG	3 - 5
41-CYANO	01	00024.05	CAP	3 - 5
41-CYANO	01	00027.01	SC	3 - 5
41-CYANO	01	00027.02	SC	3 - 5
41-CYANO	01	00028.01	FLG	3 - 5
41-CYANO	01	00033.01	FLG	3 - 5
41-CYANO	01	00033.02	FLG	3 - 5
41-CYANO	01	00035.02	FLG	3 - 5
41-CYANO	01	00039	BALL	3 - 5
41-CYANO	01	00039.01	FLG	3 - 5
41-CYANO	01	00039.02	FLG	3 - 5
41-CYANO	01	00043.01	FLG	3 - 5
41-CYANO	01	00043.02	FLG	3 - 5
41-CYANO	01	00044	PS	3 - 5
41-CYANO	01	00045.01	FLG	3 - 5
41-CYANO	01	00051	PS	3 - 5
41-CYANO	01	00052.01	FLG	**38**
41-CYANO	01	00053.06	PLG	3 - 5
41-CYANO	01	00054.04	SC	3 - 5
41-CYANO	01	00055	BALL	3 - 5
41-CYANO	01	00055.04	SC	3 - 5
41-CYANO	01	00055.05	SC	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00057	BALL	3 - 5
41-CYANO	01	00060	PS	3 - 5
41-CYANO	01	00060.02	FLG	3 - 5
41-CYANO	01	00060.03	FLG	3 - 5
41-CYANO	01	00061.02	SC	3 - 5
41-CYANO	01	00061.03	SC	3 - 5
41-CYANO	01	00061.04	SC	3 - 5
41-CYANO	01	00061.05	UN	3 - 5
41-CYANO	01	00061.06	PLG	3 - 5
41-CYANO	01	00065.02	ELB	3 - 5
41-CYANO	01	00065.05	ELB	3 - 5
41-CYANO	01	00066.05	PLG	3 - 5
41-CYANO	01	00067.02	SC	3 - 5
41-CYANO	01	00068.06	TEE	3 - 5
41-CYANO	01	00069	PS	**21300**
41-CYANO	01	00070.02	FLG	3 - 5
41-CYANO	01	00070.07	ELB	3 - 5
41-CYANO	01	00072.04	UN	3 - 5
41-CYANO	01	00073.01	SC	3 - 5
41-CYANO	01	00073.02	PLG	3 - 5
41-CYANO	01	00073.04	SC	3 - 5
41-CYANO	01	00074.02	ELB	3 - 5
41-CYANO	01	00074.07	G	3 - 5
41-CYANO	01	00075.04	TEE	3 - 5
41-CYANO	01	00076.01	SC	3 - 5
41-CYANO	01	00076.03	SC	3 - 5
41-CYANO	01	00077.01	SC	3 - 5
41-CYANO	01	00078.07	ELB	3 - 5
41-CYANO	01	00079.01	FLG	3 - 5
41-CYANO	01	00080	FLG	3 - 5
41-CYANO	01	00082.06	CON	**580**
41-CYANO	01	00085	GATV	3 - 5
41-CYANO	01	00085.01	FLG	3 - 5
41-CYANO	01	00087	GATV	3 - 5
41-CYANO	01	00090.06	FLG	3 - 5
41-CYANO	01	00091.03	ELB	3 - 5
41-CYANO	01	00092	FLG	3 - 5
41-CYANO	01	00093.02	FLG	3 - 5
41-CYANO	01	00104.01	FLG	3 - 5
41-CYANO	01	00113	BALL	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00114.01	SC	**32**
41-CYANO	01	00117.03	FLG	3 - 5
41-CYANO	01	00117.05	SC	3 - 5
41-CYANO	01	00120.02	FLG	3 - 5
41-CYANO	01	00121	AGI	3 - 5
41-CYANO	01	00121.01	FLG	3 - 5
41-CYANO	01	00124	FLG	3 - 5
41-CYANO	01	00125	BALL	3 - 5
41-CYANO	01	00127.04	ELB	3 - 5
41-CYANO	01	00127.07	PLG	3 - 5
41-CYANO	01	00132	BALL	3 - 5
41-CYANO	01	00132.01	PLG	3 - 5
41-CYANO	01	00133.02	CON	3 - 5
41-CYANO	01	00134	BALL	3 - 5
41-CYANO	01	00135	BALL	3 - 5
41-CYANO	01	00137	BALL	3 - 5
41-CYANO	01	00142.02	FLG	3 - 5
41-CYANO	01	00143	MW	3 - 5
41-CYANO	01	00144.01	SC	3 - 5
41-CYANO	01	00144.03	ELB	3 - 5
41-CYANO	01	00145.03	G	**265**
41-CYANO	01	00146.03	TEE	3 - 5
41-CYANO	01	00146.04	TEE	3 - 5
41-CYANO	01	00146.07	CON	3 - 5
41-CYANO	01	00147.02	SC	3 - 5
41-CYANO	01	00148.02	SC	3 - 5
41-CYANO	01	00150	MV	3 - 5
41-CYANO	01	00150.05	SC	3 - 5
41-CYANO	01	00151.06	ELB	3 - 5
41-CYANO	01	00151.09	ELB	3 - 5
41-CYANO	01	00152.03	CON	3 - 5
41-CYANO	01	00154	PS	**443**
41-CYANO	01	00154.01	FLG	3 - 5
41-CYANO	01	00154.07	CON	3 - 5
41-CYANO	01	00156.02	SC	3 - 5
41-CYANO	01	00160.01	SC	3 - 5
41-CYANO	01	00160.03	FLG	3 - 5
41-CYANO	01	00163	BALL	3 - 5
41-CYANO	01	00163.02	SC	3 - 5
41-CYANO	01	00164	PS	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00164.03	SC	3 - 5
41-CYANO	01	00164.10	SC	3 - 5
41-CYANO	01	00165.03	SC	**23**
41-CYANO	01	00166.01	SC	3 - 5
41-CYANO	01	00167	MV	3 - 5
41-CYANO	01	00167.02	SC	3 - 5
41-CYANO	01	00167.04	ELB	3 - 5
41-CYANO	01	00168.03	CAP	**12**
41-CYANO	01	00169.01	FLG	3 - 5
41-CYANO	01	00171	PS	3 - 5
41-CYANO	01	00171.02	FLG	3 - 5
41-CYANO	01	00171.04	CON	3 - 5
41-CYANO	01	00171.10	SC	3 - 5
41-CYANO	01	00172.01	SC	3 - 5
41-CYANO	01	00174.01	SC	3 - 5
41-CYANO	01	00174.03	ELB	3 - 5
41-CYANO	01	00175	MV	3 - 5
41-CYANO	01	00176	BALL	3 - 5
41-CYANO	01	00178	GATV	3 - 5
41-CYANO	01	00178.02	FLG	3 - 5
41-CYANO	01	00180.02	FLG	3 - 5
41-CYANO	01	00182.01	FLG	3 - 5
41-CYANO	01	00183.02	FLG	3 - 5
41-CYANO	01	00184	GATV	3 - 5
41-CYANO	01	00184.01	FLG	3 - 5
41-CYANO	01	00184.02	FLG	3 - 5
41-CYANO	01	00185	GATV	3 - 5
41-CYANO	01	00186	CV	3 - 5
41-CYANO	01	00186.01	FLG	3 - 5
41-CYANO	01	00188.06	SC	3 - 5
41-CYANO	01	00189.01	SC	3 - 5
41-CYANO	01	00189.05	ELB	3 - 5
41-CYANO	01	00191	BALL	3 - 5
41-CYANO	01	00191.02	SC	3 - 5
41-CYANO	01	00191.07	UN	3 - 5
41-CYANO	01	00192.02	SC	3 - 5
41-CYANO	01	00192.10	FLG	3 - 5
41-CYANO	01	00193.02	FLG	3 - 5
41-CYANO	01	00194.02	FLG	3 - 5
41-CYANO	01	00195	BALL	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00195.02	SC	3 - 5
41-CYANO	01	00195.05	ELB	3 - 5
41-CYANO	01	00196	BALL	3 - 5
41-CYANO	01	00196.03	CAP	3 - 5
41-CYANO	01	00196.05	ELB	3 - 5
41-CYANO	01	00198.01	SC	3 - 5
41-CYANO	01	00198.08	SC	3 - 5
41-CYANO	01	00198.09	SC	3 - 5
41-CYANO	01	00199.02	SC	3 - 5
41-CYANO	01	00199.04	PLG	3 - 5
41-CYANO	01	00200.01	SC	3 - 5
41-CYANO	01	00200.05	ELB	3 - 5
41-CYANO	01	00200.07	CAP	3 - 5
41-CYANO	01	00201.02	FLG	3 - 5
41-CYANO	01	00202.04	SC	3 - 5
41-CYANO	01	00202.05	UN	3 - 5
41-CYANO	01	00203	BALL	3 - 5
41-CYANO	01	00204	BALL	3 - 5
41-CYANO	01	00205	PS	**110**
41-CYANO	01	00206	BALL	3 - 5
41-CYANO	01	00207	BALL	3 - 5
41-CYANO	01	00208.05	UN	3 - 5
41-CYANO	01	00208.06	PLG	3 - 5
41-CYANO	01	00209.01	FLG	3 - 5
41-CYANO	01	00211.01	CON	3 - 5
41-CYANO	01	00212.05	ELB	3 - 5
41-CYANO	01	00212.08	SC	3 - 5
41-CYANO	01	00213	PS	3 - 5
41-CYANO	01	00213.04	PLG	3 - 5
41-CYANO	01	00215.02	BFL	3 - 5
41-CYANO	01	00218	BALL	3 - 5
41-CYANO	01	00218.06	PLG	3 - 5
41-CYANO	01	00220	BALL	3 - 5
41-CYANO	01	00222	CV	3 - 5
41-CYANO	01	00224.02	SC	3 - 5
41-CYANO	01	00225.01	FLG	3 - 5
41-CYANO	01	00225.03	FLG	3 - 5
41-CYANO	01	00228	FLG	3 - 5
41-CYANO	01	00228.01	FLG	3 - 5
41-CYANO	01	00229.02	FLG	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00230	PS	3 - 5
41-CYANO	01	00230.01	FLG	3 - 5
41-CYANO	01	00230.07	SC	3 - 5
41-CYANO	01	00231.02	FLG	3 - 5
41-CYANO	01	00232.04	ELB	3 - 5
41-CYANO	01	00233.01	SC	3 - 5
41-CYANO	01	00234	BALL	3 - 5
41-CYANO	01	00235	BALL	3 - 5
41-CYANO	01	00236.07	TEE	3 - 5
41-CYANO	01	00236.08	TEE	3 - 5
41-CYANO	01	00237.02	SC	3 - 5
41-CYANO	01	00238.01	SC	**86**
41-CYANO	01	00238.04	CAP	3 - 5
41-CYANO	01	00238.10	SC	3 - 5
41-CYANO	01	00239	BALL	3 - 5
41-CYANO	01	00239.01	SC	3 - 5
41-CYANO	01	00239.03	ELB	3 - 5
41-CYANO	01	00240.01	SC	3 - 5
41-CYANO	01	00240.06	ELB	3 - 5
41-CYANO	01	00241	BALL	3 - 5
41-CYANO	01	00241.01	SC	3 - 5
41-CYANO	01	00241.05	ELB	3 - 5
41-CYANO	01	00241.07	UN	3 - 5
41-CYANO	01	00242.01	SC	**105**
41-CYANO	01	00243.02	SC	3 - 5
41-CYANO	01	00244.02	SC	3 - 5
41-CYANO	01	00245	BALL	**35**
41-CYANO	01	00245.04	ELB	3 - 5
41-CYANO	01	00245.06	UN	3 - 5
41-CYANO	01	00246.02	FLG	3 - 5
41-CYANO	01	00247.01	SC	3 - 5
41-CYANO	01	00249.02	SC	3 - 5
41-CYANO	01	00250.01	FLG	3 - 5
41-CYANO	01	00251.01	SC	3 - 5
41-CYANO	01	00252	BALL	3 - 5
41-CYANO	01	00252.01	SC	3 - 5
41-CYANO	01	00252.04	UN	3 - 5
41-CYANO	01	00253.03	CON	3 - 5
41-CYANO	01	00254.01	SC	3 - 5
41-CYANO	01	00254.02	SC	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00255.04	SC	3 - 5
41-CYANO	01	00257.02	SC	3 - 5
41-CYANO	01	00258.01	SC	3 - 5
41-CYANO	01	00258.04	ELB	3 - 5
41-CYANO	01	00259.02	SC	3 - 5
41-CYANO	01	00260.02	FLG	3 - 5
41-CYANO	01	00261.01	FLG	3 - 5
41-CYANO	01	00267.01	SC	3 - 5
41-CYANO	01	00268.04	PLG	**26**
41-CYANO	01	00271.06	PLG	3 - 5
41-CYANO	01	00273.02	SC	3 - 5
41-CYANO	01	00273.03	FLG	3 - 5
41-CYANO	01	00280	BALL	3 - 5
41-CYANO	01	00283.02	FLG	3 - 5
41-CYANO	01	00285.01	SC	3 - 5
41-CYANO	01	00285.05	FLG	3 - 5
41-CYANO	01	00287.01	PLG	3 - 5
41-CYANO	01	00287.05	TEE	3 - 5
41-CYANO	01	00287.06	TEE	3 - 5
41-CYANO	01	00288	BALL	3 - 5
41-CYANO	01	00288.02	SC	3 - 5
41-CYANO	01	00288.05	ELB	3 - 5
41-CYANO	01	00288.07	CON	3 - 5
41-CYANO	01	00289.01	SC	3 - 5
41-CYANO	01	00289.04	UN	3 - 5
41-CYANO	01	00289.05	SC	3 - 5
41-CYANO	01	00289.06	TEE	3 - 5
41-CYANO	01	00289.09	PLG	3 - 5
41-CYANO	01	00289.11	SC	3 - 5
41-CYANO	01	00289.12	UN	3 - 5
41-CYANO	01	00290.05	CON	3 - 5
41-CYANO	01	00291.02	FLG	3 - 5
41-CYANO	01	00292.03	FLG	3 - 5
41-CYANO	01	00293	FCO	3 - 5
41-CYANO	01	00293.01	PLG	3 - 5
41-CYANO	01	00293.04	ELB	3 - 5
41-CYANO	01	00294.03	UN	3 - 5
41-CYANO	01	00294.05	ELB	3 - 5
41-CYANO	01	00296.02	ELB	3 - 5
41-CYANO	01	00296.05	ELB	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00298.02	FLG	3 - 5
41-CYANO	01	00299.01	SC	3 - 5
41-CYANO	01	00300.03	TEE	3 - 5
41-CYANO	01	00300.04	TEE	3 - 5
41-CYANO	01	00300.13	FCO	3 - 5
41-CYANO	01	00300.15	UN	3 - 5
41-CYANO	01	00300.16	PLG	3 - 5
41-CYANO	01	00301	BALL	3 - 5
41-CYANO	01	00302	BALL	3 - 5
41-CYANO	01	00302.02	SC	3 - 5
41-CYANO	01	00302.05	TEE	3 - 5
41-CYANO	01	00302.07	PLG	3 - 5
41-CYANO	01	00303.02	SC	3 - 5
41-CYANO	01	00303.04	FLG	3 - 5
41-CYANO	01	00304.01	FLG	3 - 5
41-CYANO	01	00305.10	ELB	3 - 5
41-CYANO	01	00305.11	ELB	3 - 5
41-CYANO	01	00308	GATV	3 - 5
41-CYANO	01	00308.02	FLG	**63**
41-CYANO	01	00312	BALL	3 - 5
41-CYANO	01	00313.02	CON	3 - 5
41-CYANO	01	00315	CV	3 - 5
41-CYANO	01	00318.03	ELB	3 - 5
41-CYANO	01	00318.05	SC	3 - 5
41-CYANO	01	00319.01	SC	3 - 5
41-CYANO	01	00329	BALL	3 - 5
41-CYANO	01	00330.03	PLG	3 - 5
41-CYANO	01	00332.08	CAP	3 - 5
41-CYANO	01	00335	BALL	3 - 5
41-CYANO	01	00341.03	SC	3 - 5
41-CYANO	01	00341.06	ELB	3 - 5
41-CYANO	01	00341.07	ELB	3 - 5
41-CYANO	01	00341.08	ELB	3 - 5
41-CYANO	01	00342.01	PLG	3 - 5
41-CYANO	01	00343.06	SC	3 - 5
41-CYANO	01	00345.02	SC	3 - 5
41-CYANO	01	00345.04	UN	3 - 5
41-CYANO	01	00346.04	UN	3 - 5
41-CYANO	01	00347.03	PLG	3 - 5
41-CYANO	01	00350.03	SC	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	01	00350.08	UN	3 - 5
41-CYANO	01	00351.01	ELB	3 - 5
41-CYANO	01	00351.02	ELB	3 - 5
41-CYANO	01	00353.05	ELB	3 - 5
41-CYANO	01	00354	BALL	3 - 5
41-CYANO	01	00364.02	SC	3 - 5
41-CYANO	01	00364.03	SC	3 - 5
41-CYANO	01	00365.06	CON	3 - 5
41-CYANO	01	00365.07	PLG	3 - 5
41-CYANO	01	00366.01	SC	3 - 5
41-CYANO	01	00366.04	UN	3 - 5
41-CYANO	01	00368	FLG	3 - 5
41-CYANO	01	00368.02	SC	3 - 5
41-CYANO	01	00373.02	SC	3 - 5
41-CYANO	01	00374.02	PLG	3 - 5
41-CYANO	01	00380.03	FLG	3 - 5
41-CYANO	01	00381	FLG	3 - 5
41-CYANO	01	00383.09	PLG	3 - 5
41-CYANO	01	00384	BALL	3 - 5
41-CYANO	01	00385.01	ELB	3 - 5
41-CYANO	01	00386.02	ELB	3 - 5
41-CYANO	41 TKFRM	01701.03	FLG	3 - 5
41-CYANO	41 TKFRM	01701A	BALL	3 - 5
41-CYANO	41 TKFRM	01705.04	ELB	3 - 5
41-CYANO	41 TKFRM	01708	BALL	3 - 5
41-CYANO	41 TKFRM	01708.02	FLG	3 - 5
41-CYANO	41 TKFRM	01712	PS	3 - 5
41-CYANO	41 TKFRM	01718	BALL	3 - 5
41-CYANO	41 TKFRM	01718.06	UN	3 - 5
41-CYANO	41 TKFRM	01725.03	SC	3 - 5
41-CYANO	41 TKFRM	01726.01	SC	3 - 5
41-CYANO	41 TKFRM	01726.02	SC	3 - 5
41-CYANO	41 TKFRM	01727.03	SC	3 - 5
41-CYANO	41 TKFRM	01727.04	SC	3 - 5
41-CYANO	41 TKFRM	01729.02	SC	3 - 5
41-CYANO	41 TKFRM	01734.03	SC	3 - 5
41-CYANO	41 TKFRM	01734.13	SC	3 - 5
41-CYANO	41 TKFRM	01734.14	SC	3 - 5
41-CYANO	41 TKFRM	01738.03	CAP	3 - 5
41-CYANO	41 TKFRM	01738.04	CPL	3 - 5

Area	Sub Area	Tag Number	Type	Concentration
41-CYANO	41 TKFRM	01740	BALL	3 - 5
41-CYANO	41 TKFRM	01741	BALL	3 - 5
41-CYANO	41 TKFRM	01742.04	UN	**5842**
41-CYANO	41 TKFRM	01742.06	UN	3 - 5
41-CYANO	41 TKFRM	01743.01	SC	3 - 5
41-CYANO	41 TKFRM	01744	BALL	3 - 5
41-CYANO	41 TKFRM	01744.04	UN	3 - 5
41-CYANO	41 TKFRM	01746.02	SC	3 - 5
41-CYANO	41 TKFRM	01748.06	TEE	3 - 5
41-CYANO	41 TKFRM	01749.05	UN	3 - 5
41-CYANO	41 TKFRM	01749.08	FLG	3 - 5
41-CYANO	41 TKFRM	01750.03	CPL	3 - 5
41-CYANO	41 TKFRM	01750.07	UN	**110**
41-CYANO	41 TKFRM	01754	BALL	3 - 5
41-CYANO	41 TKFRM	01756.05	SC	3 - 5
41-CYANO	41 TKFRM	01757.03	SC	3 - 5
41-CYANO	41 TKFRM	01757.05	UN	3 - 5
41-CYANO	41 TKFRM	01758.06	UN	3 - 5
41-CYANO	41 TKFRM	01763.01	FLG	3 - 5
41-CYANO	41 TKFRM	01769	BALL	3 - 5
41-CYANO	41 TKFRM	01774	BALL	3 - 5
41-CYANO	41 TKFRM	01775	BALL	3 - 5
41-CYANO	41 TKFRM	01775.02	SC	3 - 5
41-CYANO	41 TKFRM	01775.09	UN	3 - 5
41-CYANO	41 TKFRM	01776.08	PLG	3 - 5
41-CYANO	41 TKFRM	03924.01	SC	3 - 5
41-CYANO	41 TKFRM	03925.01	SC	3 - 5
41-CYANO	41 TKFRM	03926	PS	**3023**
41-CYANO	41 TKFRM	03927.02	G	3 - 5
41-CYANO	41 TKFRM	03927.03	SC	3 - 5
41-CYANO	41 TKFRM	03933.08	TEE	3 - 5
41-CYANO	41 TKFRM	03934.01	SC	3 - 5
41-CYANO	41 TKFRM	03935	BALL	3 - 5

APPENDIX D

TO BYPASS INCIDENT REPORTS

BYPASS INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 7/14/2010	Time: 06:02
Bypass ended:	Date: 7/14/2010	Time: 06:07
Bypass duration:	Hours:	Minutes: 5

2) Estimated HAPs emissions: Acetonitrile-0.29 lbs., Benzene-0.17 lbs., Xylene-0.00058 lbs., Hydrogen Cyanide-0.28 lbs.

3) What was the general cause of the bypass incident?
Low excess oxygen content in the thermal oxidizer.

4) What type of bypass occurred? (Check all that apply.)

- € Instrument nitrogen less than 60 psi
- € Instrument air less than 60 psi
- € Stack temperature less than 700°C
- € Chamber temperature greater than 1038°C
- € Stack temperature greater than 982°C
- € Loss of electrical power
- € Other utility disruption [Describe below]
- € Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- X Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer, reactor A, reactor B, 403 column.

6) What is the root cause(s) of the bypass incident?

During preparation for cleaning the 503 cooler, reactor rates were reduced and the exchanger was bypassed. The excess heat from the primary cooler caused additional organics to be sent to the thermal oxidizer. This resulted in a low oxygen interlock shutdown of the thermal oxidizer.

7) How did you determine the root cause(s) of the bypass incident? Process trend analysis and confirmation on the alarm screen at the thermal oxidizer.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? During the plant shutdown shortly after this bypass event, the picoline feed interlock to the waste gas valve was downloaded. This will shut off all organic feed once the waste gas vent valve is opened. This occurs during all bypass events.
9) Who is responsible for completing the corrective action(s)? Unit process engineer.
10) What actions were taken to end the bypass incident and restore normal operation? Feed was removed from the reactors once the bypass occurred. The operator re-lit the thermal oxidizer and once at temperature, started feeding the reactors again.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ No* *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? N/A ☐ Yes ☐ No
13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ Yes X No If so, provide recommendations:

Name: Ben Stewart	Signature:	Date: 7/27/2010

I/2266513.1

Revision 0
9/22/08

BYPASS INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 7/14/2010	Time: 06:2~~5~~4 56
Bypass ended:	Date: 7/14/2010	Time: 06:26
Bypass duration:	Hours:	Minutes: ~~12~~ 56

2) Estimated HAPs emissions: Acetonitrile-0.02 lbs., Benzene-0.01 lbs., Xylene-0.00003 lbs., Hydrogen Cyanide-0.02 lbs.

3) What was the general cause of the bypass incident?
High chamber temperature interlock.

4) What type of bypass occurred? **(Check all that apply.)**

- € Instrument nitrogen less than 60 psi
- € Instrument air less than 60 psi
- € Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- € Stack temperature greater than 982°C
- € Loss of electrical power
- € Other utility disruption [Describe below]
- € Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- € Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

During restart of the reactors after an earlier bypass event, the chamber temperature tripped the high temperature interlock and shut down the thermal oxidizer. This was caused by inadequate air flow, causing a higher retention time in the chamber.

7) How did you determine the root cause(s) of the bypass incident? Process trend analysis and confirmation on the alarm screen at the thermal oxidizer.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident: An MOC to modify the control logic to the thermal oxidizer PLC has been approved. This logic will allow for the O2 set-point to ramp down once waste gas is introduced, allowing the blower to run at higher speeds, pushing the heat out of the chamber and allowing for a more stable re-start of the thermal oxidizer.
9) Who is responsible for completing the corrective action(s)? Unit process engineer.
10) What actions were taken to end the bypass incident and restore normal operation? The operator saw the chamber temperature near the interlock value and started to remove feed prior to the bypass. The interlock tripped prior to all feed being removed.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ No* *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? N/A ☐ Yes ☐ No
13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ Yes X No If so, provide recommendations:

Name: Ben Sexaner	Signature: [signature]	Date: 8/3/10

I/2266513.1

Revision 0
9/22/08

BYPASS INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 7/15/2010	Time: 06:45
Bypass ended:	Date: 7/15/2010	Time: 06:48
Bypass duration:	Hours:	Minutes: 3

2) Estimated HAPs emissions: Acetonitrile-0.18 lbs., Benzene-0.11 lbs., Xylene-0.00037 lbs., Hydrogen Cyanide-0.18 lbs.

3) What was the general cause of the bypass incident?
High stack temperature interlock shut down the thermal oxidizer.

4) What type of bypass occurred? (Check all that apply.)

- € Instrument nitrogen less than 60 psi
- € Instrument air less than 60 psi
- € Stack temperature less than 700°C
- € Chamber temperature greater than 1038°C
- X Stack temperature greater than 1033°C
- € Loss of electrical power
- € Other utility disruption [Describe below]
- € Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- € Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer and reactor B.

6) What is the root cause(s) of the bypass incident?

During re-start of reactor B, the reactor temperature became unstable. This instability led to a high stack temperature failure of the thermal oxidizer. During investigation of this incident, reactor B began filling with water. Two water bayonets were found to have catastrophically failed. The immediate vaporization of the water from the leaking bayonets caused the unstable conditions and led to the failure.

7) How did you determine the root cause(s) of the bypass incident?

Process trend analysis and equipment inspection.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

All six water bayonets were removed from the reactor and inspected/repaired. Additionally, an interlock on the organic feed line was installed that will shut off the organic feed once the waste gas vent valve is opened. This interlock will minimize any emissions during a bypass event.

9) Who is responsible for completing the corrective action(s)?

Unit process engineer.

10) What actions were taken to end the bypass incident and restore normal operation?

Feed was removed form the reactors once the thermal oxidizer was bypassed. A notification was given to the unit process engineer and the unit was instructed to leave the plant down until further investigation could be performed.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Stewart	**Signature:**	**Date:** 7/27/10

I/2266513.1

Revision 0
9/22/08

BYPASS INCIDENT REPORT
Plant 41
This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 7/27/2010	Time: 13:55
Bypass ended:	Date: 7/27/2010	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
The 402 bottoms lost flow and caused the ammonia recovery system circulation to stop.

4) What type of bypass occurred? (Check all that apply.)

- € Instrument nitrogen less than 60 psi
- € `Instrument air less than 60 psi
- € Stack temperature less than 700°C
- € Chamber temperature greater than 1038°C
- X Stack temperature greater than 1033°C
- € Loss of electrical power
- € Other utility disruption [Describe below]
- € Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- € Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer and the ammonia recovery system (401/402/403/404 columns).

6) What is the root cause(s) of the bypass incident?

Pump failure on the 402 column bottoms line.

7) How did you determine the root cause(s) of the bypass incident?

Spoke with operator about the incident immediately after it occurred.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

Blockages were found in the inlet piping to the bottoms pumps during the following process cleaning.

9) Who is responsible for completing the corrective action(s)?

Unit process engineer.

10) What actions were taken to end the bypass incident and restore normal operation?

The picoline feed valves are interlocked to the waste gas vent valve. The bypass was halted immediately.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ken Stewart	**Signature:**	**Date:** 9/15/2010

I/2266513.1

Revision 0
9/22/08

BYPASS INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 8/31/2010	Time: 10:42
Bypass ended:	Date: 8/31/2010	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?

A loose wire on the fire eye mounted on the chamber of the thermal oxidizer.

4) What type of bypass occurred? (Check all that apply.)

- € Instrument nitrogen less than 60 psi
- € Instrument air less than 60 psi
- € Stack temperature less than 700°C
- € Chamber temperature greater than 1038°C
- € Stack temperature greater than 982°C
- € Loss of electrical power
- € Other utility disruption [Describe below]
- X Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- € Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

A wire was found loose on the connection to the fire eye.

7) How did you determine the root cause(s) of the bypass incident? Instrument technician found the loose wire during troubleshooting of the event.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? The fire eye was re-wired prior to restart.
9) Who is responsible for completing the corrective action(s)? Instrument technician.
10) What actions were taken to end the bypass incident and restore normal operation? The picoline feed valves are interlocked to the waste gas vent valve. The bypass was halted immediately.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No*** *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? **N/A** **☐ Yes** **☐ No**
13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No** If so, provide recommendations:

Name: Ben Stewart	**Signature:**	**Date:** 9/15/2010

BYPASS INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 9/30/2010	Time: 02:26
Bypass ended:	Date: 9/30/2010	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
Electrical power upset caused reactor air blower to fail.

4) What type of bypass occurred? (Check all that apply.)

€ Instrument nitrogen less than 60 psi
€ Instrument air less than 60 psi
€ Stack temperature less than 700°C
X Chamber temperature greater than 1038°C
€ Stack temperature greater than 982°C
X Loss of electrical power
€ Other utility disruption [Describe below]
€ Fire eye lost sight of flame
€ Plant start-up
€ Plant shutdown
€ PHD data lost
€ Erratic Thermal Oxidizer temperature
€ Operator error
€ Mechanical failure
€ Process upset
€ Instrument/control parameters
€ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 AC Blower, Thermal Oxidizer

6) What is the root cause(s) of the bypass incident?

Power failure knocked out the AC Blower and as a result of sudden air flow decrease, Thermal Oxidizer failed due to high chamber temperature.

7) How did you determine the root cause(s) of the bypass incident?

Interview with the operator and review of historical process trends.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

This was caused by a power upset from IPL.

9) Who is responsible for completing the corrective action(s)?

Unit Process Engineer.

10) What actions were taken to end the bypass incident and restore normal operation?

The picoline feed is interlocked with the waste gas vent valve. The ammonia feed was removed once the 32 vaporizer pressure was low enough. Once power was reset, the plant was restarted.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **X N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Spinato	**Signature:**	**Date:** 10/15/2010

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BYPASS INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 12/30/2010	Time: 6:~~18~~20 SG
Bypass ended:	Date: 12/30/2010	Time:6:21
Bypass duration:	Hours:	Minutes: 0:01

2) Estimated HAPs emissions: Acetonitrile=0.06 lbs. SG, Benzene=0.01 lbs. SG, Xylene=~~0.00012~~ 0.00003 SG lbs., Hydrogen Cyanide=~~0.06~~ 0.01 SG lbs.

3) What was the general cause of the bypass incident?
Electrical failure on the main 480V supply to plant 41.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- ☐ Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- X Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

All of plant 41.

6) What is the root cause(s) of the bypass incident?

Loose fuse connections on the main fuse panel caused the electrical failures that occurred from 12/30/2010 to 01/02/2011.

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7) How did you determine the root cause(s) of the bypass incident?

Troubleshooting from the in-house control mechanics and support from Indianapolis Power and Light indentified a hot spot on the fuse panel.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

Clamps will be installed on the fuse connections to ensure proper contact during the next scheduled shut down.

9) Who is responsible for completing the corrective action(s)?

Site central maintenance.

10) What actions were taken to end the bypass incident and restore normal operation?

The picoline feed is interlocked with the waste gas vent valve. The ammonia feed was removed once the 32 vaporizer pressure was low enough. Once power was reset, the plant was restarted.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **X N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Stenger	Signature: [signature]	Date: 1 / 11 / 2014

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MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 1/1/2011	Time: 02:50
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
Electrical failure on the main 480V supply to plant 41.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- ☐ Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- X Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

All of plant 41.

6) What is the root cause(s) of the bypass incident?

Loose fuse connections on the main fuse panel caused the electrical failures that occurred from 12/30/2010 to 01/02/2011.

7) How did you determine the root cause(s) of the bypass incident? Troubleshooting from the in-house control mechanics and support from Indianapolis Power and Light indentified a hot spot on the fuse panel.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? Clamps will be installed on the fuse connections to ensure proper contact during the next scheduled shut down.
9) Who is responsible for completing the corrective action(s)? Site central maintenance.
10) What actions were taken to end the bypass incident and restore normal operation? The picoline feed is interlocked with the waste gas vent valve. The ammonia feed was removed once the 32 vaporizer pressure was low enough. Once power was reset, the plant was restarted.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No*** *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? **X N/A** **☐ Yes** **☐ No**
13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No** If so, provide recommendations:

Name: Ben Stewart	**Signature:**	**Date:** 1/11/2011

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MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 1/2/2011	Time: 04:54
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
Electrical failure on the main 480V supply to plant 41.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- ☐ Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- X Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

All of plant 41.

6) What is the root cause(s) of the bypass incident?

Loose fuse connections on the main fuse panel caused the electrical failures that occurred from 12/30/2010 to 01/02/2011.

7) How did you determine the root cause(s) of the bypass incident? Troubleshooting from the in-house control mechanics and support from Indianapolis Power and Light indentified a hot spot on the fuse panel.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? Clamps will be installed on the fuse connections to ensure proper contact during the next scheduled shut down.
9) Who is responsible for completing the corrective action(s)? Site central maintenance.
10) What actions were taken to end the bypass incident and restore normal operation? The picoline feed is interlocked with the waste gas vent valve. The ammonia feed was removed once the 32 vaporizer pressure was low enough. Once power was reset, the plant was restarted.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ No* *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? X N/A ☐ Yes ☐ No
13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ Yes X No If so, provide recommendations:

Name: Ben Smoot	Signature:	Date: 1/11/2011

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MALFUNCTION INCIDENT REPORT
Plant 41
This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 02/28/2011	Time: 00:19
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
The plant lost power during a storm.

4) What type of bypass occurred? (Check all that apply.)

- € Instrument nitrogen less than 60 psi
- € Instrument air less than 60 psi
- € Stack temperature less than 700°C
- € Chamber temperature greater than 1038°C
- € Stack temperature greater than 982°C
- X Loss of electrical power
- € Other utility disruption [Describe below]
- € Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- € Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

All of plant 41 operations.

6) What is the root cause(s) of the bypass incident?

The Indianapolis facility lost power during a storm in the early morning hours of 2/28/2011.

7) How did you determine the root cause(s) of the bypass incident?

Known power failure for the site.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

N/A. This was an electrical power failure to the entire site.

9) Who is responsible for completing the corrective action(s)?

N/A.

10) What actions were taken to end the bypass incident and restore normal operation?

All pumps lost power and all feed flows were stopped in addition to the feed interlock during a bypass event. Once power was restored, the plant was secured and restarted.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **X N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Dan Stewart	**Signature:** [signature]	**Date:** 3/30/11

MALFUNCTION INCIDENT REPORT
Plant 41
This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 03/08/2011	Time: 06:46
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
Both flame detectors had failed, causing the T.O. to shut down.

4) What type of bypass occurred? (Check all that apply.)

€ Instrument nitrogen less than 60 psi
€ Instrument air less than 60 psi
€ Stack temperature less than 700°C
€ Chamber temperature greater than 1038°C
€ Stack temperature greater than 982°C
□ Loss of electrical power
€ Other utility disruption [Describe below]
€ Fire eye lost sight of flame
€ Plant start-up

€ Plant shutdown
€ PHD data lost
€ Erratic Thermal Oxidizer temperature
€ Operator error
€ Mechanical failure
€ Process upset
€ Instrument/control parameters
X Other [Describe below]

5) What plant area or major equipment was affected (be specific)?
Plant 41 Thermal Oxidizer

6) What is the root cause(s) of the bypass incident?
The thermal oxidizer shut down due to loss of flame interlock. Upon further inspection of the flame detectors, there was an internal failure on both units.

7) How did you determine the root cause(s) of the bypass incident?

The instrument technician took apart the failed units and found the internal damage that contributed to the failure.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

Once the failure mode was identified, the number of spares retained in stores was increased and a more frequent change out period has been identified.

9) Who is responsible for completing the corrective action(s)?

Instrument technician.

10) What actions were taken to end the bypass incident and restore normal operation?

The picoline feed to the reactors is interlocked to the bypass valve. Once pic feed was removed, the remainder of the plant was secured until the thermal oxidizer could be re-started.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **X N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Stewart	**Signature:** BS	**Date:** 3/30/11

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MALFUNCTION INCIDENT REPORT
Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 03/12/2011	Time: 14:45
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
The thermal oxidizer stack temperature exceeded the high interlock value.

4) What type of bypass occurred? (Check all that apply.)

€ Instrument nitrogen less than 60 psi
€ Instrument air less than 60 psi
€ Stack temperature less than 700°C
€ Chamber temperature greater than 1038°C
X Stack temperature greater than 1032°C
□ Loss of electrical power
€ Other utility disruption [Describe below]
€ Fire eye lost sight of flame
€ Plant start-up
€ Plant shutdown
€ PHD data lost
€ Erratic Thermal Oxidizer temperature
€ Operator error
€ Mechanical failure
X Process upset
€ Instrument/control parameters
€ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

During an upset of the 402 (ammonia stripper) column, the sump level went empty and the sprays flows to the 403 (scrubber) and 401 (absorber) column stopped. Once these flows stopped, an excess of waste gas was sent directly to the thermal oxidizer causing the stack temperature to hit the high interlock value, shutting down the thermal oxidizer.

7) How did you determine the root cause(s) of the bypass incident?

Review of process trend data.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

Because of this incident, the 402 column was gamma scanned by an external company. The findings from this scan showed severe tray damage on the lower segments of the column. Parts were ordered and a shutdown is currently planned to repair this column (target is mid-late April, 2011).

9) Who is responsible for completing the corrective action(s)?

Unit process engineer.

10) What actions were taken to end the bypass incident and restore normal operation?

The picoline feed to the reactors is interlocked to the bypass valve. Once pic feed was removed, the remainder of the plant was secured until the thermal oxidizer could be re-started.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ No*

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? X N/A ☐ Yes ☐ No

13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ Yes X No

If so, provide recommendations:

Name: Ben Stewart	**Signature:** [signature]	**Date:** 3/30/11

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MALFUNCTION INCIDENT REPORT
Plant 41
This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 03/12/2011	Time: 17:22
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
High chamber temperature on restart of the plant.

4) What type of bypass occurred? (Check all that apply.)

- € Instrument nitrogen less than 60 psi
- € Instrument air less than 60 psi
- € Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- € Stack temperature greater than 982°C
- □ Loss of electrical power
- € Other utility disruption [Describe below]
- € Fire eye lost sight of flame
- € Plant start-up
- € Plant shutdown
- € PHD data lost
- € Erratic Thermal Oxidizer temperature
- € Operator error
- € Mechanical failure
- € Process upset
- € Instrument/control parameters
- € Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

During a re-start of the reactors, the air flow in the thermal oxidizer was too low, increasing the resonance time in the chamber and allowing for the temperature to reach the high trip interlock.

7) How did you determine the root cause(s) of the bypass incident? Review of process trend data.		
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? The PLC code had previously been re-written to allow for an excess O2 setpoint ramp down which would allow for the air blower to run at higher speeds during start up, pushing the heat out of the chamber. This code has a 30 minute step down and once the 30 minutes are up, the setpoint goes to 2% and if full combustion is not established, the O2 reading is above setpoint and the blower is running on minimum speed. This leads to a high chamber temperature and the potential for the interlock to trip. Coaching will be conducted with the operations staff on the importance of resetting the waste gas timer prior to introducing feed to either reactor in order to utilize all 30 minutes of the timer.		
9) Who is responsible for completing the corrective action(s)? Plant 41 team coordinator.		
10) What actions were taken to end the bypass incident and restore normal operation? The picoline feed to the reactors is interlocked to the bypass valve to the thermal oxidizer. The plant was secured until the thermal oxidizer could be re-started.		
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No*** *If not, provide explanation:		
12) If the SSMP was not followed, was IDEM notified? **X N/A** **☐ Yes** **☐ No**		
13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No** If so, provide recommendations:		
Name: Ben Stewart	**Signature:**	**Date:** 3/30/2011

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MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:

Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 4/19/2011	Time: 11:37
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?

High chamber temperature interlock.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

The plant steam supply was upset when one of the boilers failed. This caused an upset in the ammonia recovery system, leading to the spike in the chamber temperature in the thermal oxidizer.

7) How did you determine the root cause(s) of the bypass incident?

Process trend analysis and interviews with the operations staff.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

This was a utility failure and no direct corrective action was initiated for this event.

9) Who is responsible for completing the corrective action(s)?

N/A

10) What actions were taken to end the bypass incident and restore normal operation?

The organic feed is interlocked to the bypass valve and was shut down immediately. Once the steam load was stabilized, the thermal oxidizer was re-started and then the plant was brought back on-line.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Stewart	Signature:	Date: 5/23/2011

MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 4/19/2011	Time: 17:05
Bypass ended:	Date:	Time:
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
High chamber temperature interlock.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

The plant steam supply was upset when one of the boilers failed. This caused an upset in the ammonia recovery system, leading to the spike in the chamber temperature in the thermal oxidizer.

7) How did you determine the root cause(s) of the bypass incident? Process trend analysis.			
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? This was a utility failure and no direct corrective action was initiated for this event.			
9) Who is responsible for completing the corrective action(s)? N/A			
10) What actions were taken to end the bypass incident and restore normal operation? The organic feed is interlocked to the bypass valve and was shut down immediately. Once the steam load was stabilized, the thermal oxidizer was re-started and then the plant was brought back on-line.			
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed?	**X Yes**	**☐ No***	
*If not, provide explanation:			
12) If the SSMP was not followed, was IDEM notified?	**N/A**	**☐ Yes**	**☐ No**
13) Are revisions to the SSMP needed to better address future bypass incidents?	**☐ Yes**	**X No**	
If so, provide recommendations:			
Name: Ben Stewart	**Signature:** [signature]	**Date:** 5/23/2011	

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MALFUNCTION INCIDENT REPORT
Plant 41
This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Bypass began:	Date: 5/2/2011	Time: 13:01
Bypass ended:	Date: 5/2/2011	Time: 13:01
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
High chamber temperature during a reactor start up.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?
Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?
During the reactor start up, the excess oxygen was well above the 2% set point and the air blower at the thermal oxidizer was running at low speed. This allowed for the heat to build in the chamber and reach the 1038 C interlock value. The thermal oxidizer was not shut down and did not go through the excess oxygen set point ramp that would normally occur during a restart.

7) How did you determine the root cause(s) of the bypass incident?

Process trend analysis.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

During incident investigations around the thermal oxidizer malfunctions, the technical support for plant 41 has found that by changing the excess oxygen set point to 4 or 5 % during the reactor start ups will greatly reduce the chance that the chamber temperature will reach the 1038 C interlock value. Moving forward, we will be using this start up methodology.

9) Who is responsible for completing the corrective action(s)?

Plant 41 unit process engineer or coordinator.

10) What actions were taken to end the bypass incident and restore normal operation?

The organic feed is interlocked with the thermal oxidizer bypass valve. Once the thermal oxidizer was restarted, the reactors were started back up.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Stewart	**Signature:** [signature]	**Date:** 6/14/2011

I/2266513.1

MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Malfunction began:	Date: 5/6/2011	Time: 12:29
Malfunction ended:	Date: 5/6/2011	Time: 12:29
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?

High chamber temperature interlock.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

The reactor B ammonia flow meter fouled and showed 0 lb/hr of flow. This caused a delayed interlock to shut down the organic feed to reactor B. Once reactor B was shut down, this caused a spike in the chamber temperature, reaching the 1038 C interlock value.

7) How did you determine the root cause(s) of the bypass incident? Process trend analysis.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? A notification was entered in SAP to have the ammonia flow cell moved downstream of the ammonia super heater. This will prevent ammonium carbonate build up.
9) Who is responsible for completing the corrective action(s)? Plant 41 unit process engineer.
10) What actions were taken to end the bypass incident and restore normal operation? The organic feed is interlocked with the thermal oxidizer bypass valve. Once the thermal oxidizer was restarted, the reactors were started back up.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ **No*** *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? **N/A** ☐ **Yes** ☐ **No**
13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ **Yes** **X No** If so, provide recommendations:

Name: Ben Sturm	**Signature:**	**Date:** 5/23/2011

I/2266513.1

Revision 0
9/22/08

MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Malfunction began:	Date: 5/8/2011	Time: 23:12
Malfunction ended:	Date: 5/8/2011	Time: 23:12
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
High chamber temperature interlock.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

During the reactor start up, the excess oxygen was well above the 2% set point and the air blower at the thermal oxidizer was running at low speed. This allowed for the heat to build in the chamber and reach the 1038 C interlock value. The reactors were initially started up at 22:50 and shut back down at 23:02 due to ammonia recovery system issues. Upon the attempted restart, the bypass occurred. The thermal oxidizer was not shutdown with the reactors and did not allow for the excess oxygen set point ramp during normal start up.

7) How did you determine the root cause(s) of the bypass incident?

Process trend analysis.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

During incident investigations around the thermal oxidizer malfunctions, the technical support for plant 41 has found that by changing the excess oxygen set point to 4 or 5 % during the reactor start ups will greatly reduce the chance that the chamber temperature will reach the 1038 C interlock value. Moving forward, we will be using this start up methodology.

9) Who is responsible for completing the corrective action(s)?

Plant 41 unit process engineer or coordinator.

10) What actions were taken to end the bypass incident and restore normal operation?

The organic feed is interlocked with the thermal oxidizer bypass valve. Once the thermal oxidizer was restarted, the reactors were started back up.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? **X Yes** **☐ No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **N/A** **☐ Yes** **☐ No**

13) Are revisions to the SSMP needed to better address future bypass incidents? **☐ Yes** **X No**

If so, provide recommendations:

Name: Ben Stewart	**Signature:**	**Date:** 5/23/2011

MALFUNCTION INCIDENT REPORT Plant 41 This report form applies to the following areas: Cyano Reactors and Ammonia Recovery System		
Complete this form immediately following any bypass of the Thermal Oxidizer.		
1) Bypass Period		
Malfunction began:	Date: 5/9/2011	Time: 2:50
Malfunction ended:	Date: 5/9/2011	Time: 2:50
Bypass duration:	Hours:	Minutes:
2) Estimated HAPs emissions:		
3) What was the general cause of the bypass incident? High chamber temperature interlock.		

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

The reactor A ammonia feed system experienced an upset / plugging. This caused reactor B to be ran by itself. With one reactor running, the thermal oxidizer is more susceptible to elevated chamber temperatures due to the added oxygen in the waste gas stream. This allows the air blower to run at minimum speed, causing a high chamber temperature.

7) How did you determine the root cause(s) of the bypass incident? Process trend analysis.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? During incident investigations around the thermal oxidizer malfunctions, the technical support for plant 41 has found that by changing the excess oxygen set point to 4 or 5 % during the reactor start ups will greatly reduce the chance that the chamber temperature will reach the 1038 C interlock value. This is applicable to running one reactor at a time as this will allow the air blower to maintain a higher RPM, pushing the heat out of the chamber.
9) Who is responsible for completing the corrective action(s)? Plant 41 unit process engineer or coordinator.
10) What actions were taken to end the bypass incident and restore normal operation? The organic feed is interlocked with the thermal oxidizer bypass valve. Once the thermal oxidizer was restarted, the reactors were started back up.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ No* *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? N/A ☐ Yes ☐ No
13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ Yes X No If so, provide recommendations:

Name: Ben Stewart	Signature:	Date: 5/23/2011

MALFUNCTION INCIDENT REPORT
Plant 41
This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Malfunction began:	Date: 5/9/2011	Time: 3:01
Malfunction ended:	Date: 5/9/2011	Time: 3:01
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
Low stack temperature interlock.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- X Stack temperature less than 700°C
- ☐ Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?
Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?
Upon a restart of the plant 41 reactors, the waste gas valve will open to the thermal oxidizer once 760 C is reached on the stack temperature. During this reactor restart, operations started feed to the reactors once the waste gas valve was opened. This caused the stack temperature to drop below 700 C, bypassing the thermal oxidizer. This is not a routine practice during a reactor start up.

7) How did you determine the root cause(s) of the bypass incident? Process trend analysis.
8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident? The stack temperature required to open the waste gas valve will be changed from 760 C to 850 C.
9) Who is responsible for completing the corrective action(s)? Plant 41 unit process engineer.
10) What actions were taken to end the bypass incident and restore normal operation? The organic feed is interlocked with the thermal oxidizer bypass valve. Once the thermal oxidizer was restarted, the reactors were started back up.
11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X Yes ☐ No* *If not, provide explanation:
12) If the SSMP was not followed, was IDEM notified? N/A ☐ Yes ☐ No
13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ Yes X No If so, provide recommendations:

Name: Ben Stewart	Signature: [signature]	Date: 5/23/2011

I/2266513.1

Revision 0
9/22/08

MALFUNCTION INCIDENT REPORT

Plant 41

This report form applies to the following areas:
Cyano Reactors and Ammonia Recovery System

Complete this form immediately following any bypass of the Thermal Oxidizer.

1) Bypass Period

Malfunction began:	Date: 5/9/2011	Time: 4:34
Malfunction ended:	Date: 5/9/2011	Time: 4:34
Bypass duration:	Hours:	Minutes:

2) Estimated HAPs emissions:

3) What was the general cause of the bypass incident?
High chamber temperature interlock.

4) What type of bypass occurred? (Check all that apply.)

- ☐ Instrument nitrogen less than 60 psi
- ☐ Instrument air less than 60 psi
- ☐ Stack temperature less than 700°C
- X Chamber temperature greater than 1038°C
- ☐ Stack temperature greater than 982°C
- ☐ Loss of electrical power
- ☐ Other utility disruption [Describe below]
- ☐ Fire eye lost sight of flame
- ☐ Plant start-up
- ☐ Plant shutdown
- ☐ PHD data lost
- ☐ Erratic Thermal Oxidizer temperature
- ☐ Operator error
- ☐ Mechanical failure
- ☐ Process upset
- ☐ Instrument/control parameters
- ☐ Other [Describe below]

5) What plant area or major equipment was affected (be specific)?

Plant 41 thermal oxidizer.

6) What is the root cause(s) of the bypass incident?

The reactor A ammonia feed system experienced an upset / plugging. This caused reactor B to be ran by itself. With one reactor running, the thermal oxidizer is more susceptible to elevated chamber temperatures due to the added oxygen in the waste gas stream. This allows the air blower to run at minimum speed, causing a high chamber temperature.

7) How did you determine the root cause(s) of the bypass incident?

Process trend analysis.

8) What corrective action(s) has been or will be taken to address the root cause(s) of the bypass incident?

During incident investigations around the thermal oxidizer malfunctions, the technical support for plant 41 has found that by changing the excess oxygen set point to 4 or 5 % during the reactor start ups will greatly reduce the chance that the chamber temperature will reach the 1038 C interlock value. This is applicable to running one reactor at a time as this will allow the air blower to maintain a higher RPM, pushing the heat out of the chamber.

9) Who is responsible for completing the corrective action(s)?

Plant 41 unit process engineer or coordinator.

10) What actions were taken to end the bypass incident and restore normal operation?

The organic feed is interlocked with the thermal oxidizer bypass valve. Once the thermal oxidizer was restarted, the reactors were started back up.

11) Was the Start-up, Shutdown, Malfunction Plan (SSMP) followed? X **Yes** ☐ **No***

*If not, provide explanation:

12) If the SSMP was not followed, was IDEM notified? **N/A** ☐ **Yes** ☐ **No**

13) Are revisions to the SSMP needed to better address future bypass incidents? ☐ **Yes** X **No**

If so, provide recommendations:

Name: Ben Stevens	**Signature:** [signature]	**Date:** 5/23/2021

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